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# Modeling for Money

**Out in a secluded corner of the big Chance Vought aircraft plant in Dallas, Texas, is a group of men who get paid for doing what they enjoy most—making model airplanes. These are not models that fly, but ones that are used for wind tunnel testing of the big jets which CVA makes for the Navy, such as the F7U-3 Cutlass, the guided missile Regulus and the XF8U-1 dayfighter. Other models are used for exhibition and sales promotion purposes. Half the men still build and fly in meets.**

# AIR TRAILS model annual

## 1955 EDITION

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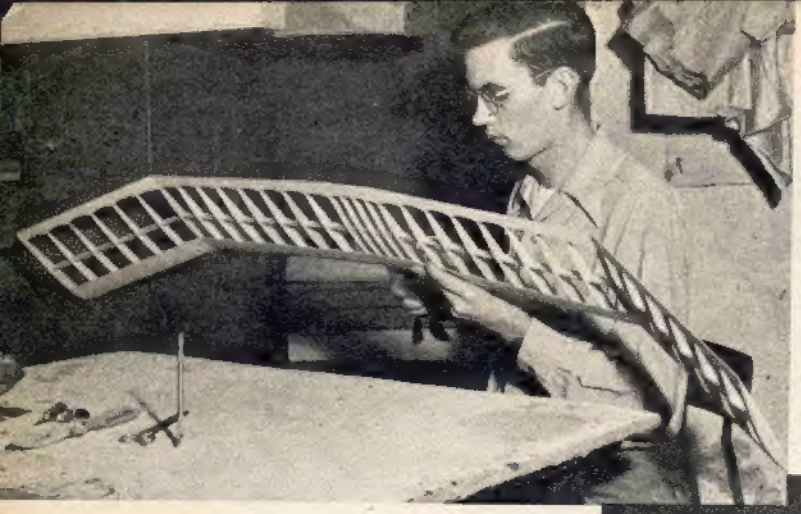
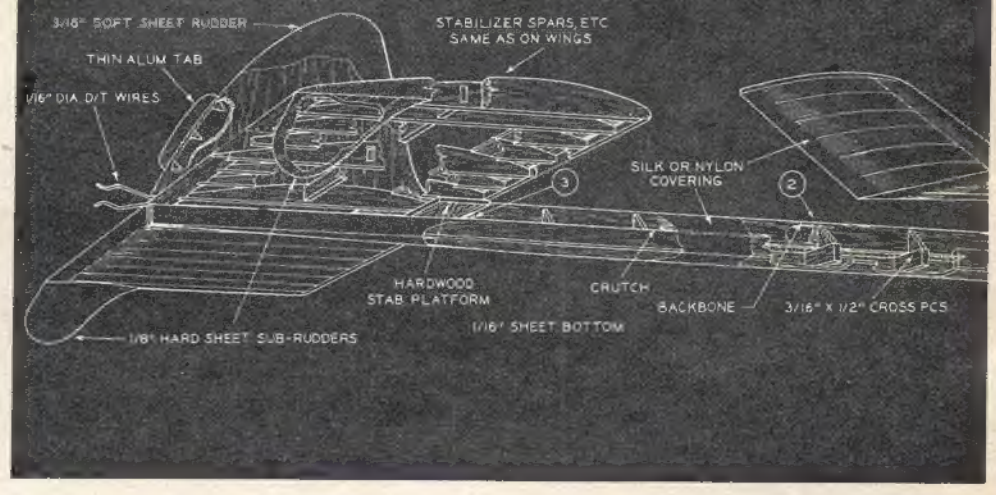


By CARL L. WHEELEY

Just about the most quiet, unassuming International Champion around today is 24-year-old Carl Wheeley of Washington, D. C., designer of this "Senior Senator" model and winner of the 1954 F.A.I. World Power Modelplane Championships. Mr. Wheeley is Technical Director of the Academy of Model Aeronautics, the governing body for model aviation in America. He supervises contest and record activities and edits the monthly A.M.A. publication "Model Aviation." A member of the Sky Lancers of Washington (S.L.O.W. Club) and the DC/RC group, Carl has a successful contest career behind him which includes registering free flight victories at the big Plymouth and N.Y. Mirror meets and establishing various National endurance marks. He started model building when in the 6th grade and just "hasn't been able to stop since."

# World's Championship Free Flight Power

## Excellent advice on the design and adjustment of .15 cubic inch craft—plus "Senior Senator" data




■ Talking with ATH Editor Al Lewis concerning publishing the *Senior Senator*, he said, "What do we do—blow up (enlarge) the plans for the *Little Senator*?" That's not far off! In all outward appearances the *Senior Senator* is practically a large *Little Senator* and the fuselage construction is almost identical. The percentage of stabilizer area has been increased slightly, there's a different construction in the wing and stab, and the plyon was thickened considerably so as to comply with the 1953 Federation Aeronautique Internationale cross-section regulation which is not in effect now.

In designing a model for the World Championship FAI Power Contest, there are three factors which must be taken into consideration: 1) the maximum allowable motor displacement of .1525 cu. ins.; 2) the minimum allowable loading of the surface area (projected wing and stab area combined) of 3.93 ozs. per square foot; and 3) the power loading of 115.6 ozs. per cubic inch of piston placement. Really not too complicated.

It was decided at the time the *Senior Senator* was built that it would be desirable to have a large model so that it would stay in sight longer in case of windy weather and so it would have a glide far better than average. This meant with the 738 sq. ins. projected area, the model had to weigh slightly more than 20 ozs. while if it had been built with a total area of about 635 sq. ins., it could have weighed 17.25 ozs. with a .149 displacement engine and still meet the rules. This weight and area penalty slows the climb to some extent, naturally, but it is thought that the ease with which the large model can be adjusted, especially the all-important pull-out, and the added glide more than compensate for the slight loss of climb.

Another very important aspect in designing an FAI Power model, or any other model, for that matter, is the very high degree of reliability needed. The reliability is needed especially for FAI models since there are 5 flights to make and to win a position on the U.S.A. team you must fly in at least two preliminary meets and be tops in the latter. This is a lot of flights to make and it takes only a very little slip-up to be completely out of the running. The motor must be tuned perfectly, the motor must run for nearly the maximum allowed (15 seconds) every time, and the transition from power flight to glide must be so smooth that little or no altitude is lost. The reliability of the *Senior Senator* is stated best by saying it placed on the U.S. FAI Power team in 1953 and 1954 and won the final Championship event in 1954 with a 5-flight total of 14 minutes, 4 seconds; just 56 seconds short of the maximum possible.

The basic design of the *Senior Senator* was started 9 years ago when I built a Forster .29 powered model with a fuselage of much the same design but with a Berkeley *American Ace* wing and stabilizer. This was followed by a raft of models showing very definitely the Hampton, Va. "BrainBusters" short tail moment arm influence, particularly that of Frank Parmenter. One of these models was the *Senator* which appeared in *AT* several years ago.

A few years ago I was eager to hit every contest I could and there was, at that time, a free flight meet almost every week-end within driving distance. I went to so many meets that I did not have enough time to repair damaged models and build new ships to replace those which had been lost. Since I still wanted to go to meets and have something to fly, I realized I had to simplify my models as much as possible to cut down on the building time. This brought about the rectangular plan for the wing and stab since, with this arrangement, all I needed was graph paper for plans, a batch of ribs cut from just 1 template for the wing and 1 template for the stab. leading edge, trailing edge, and spar stock. Not having to cut out different size ribs or cutting out pieces to form a curved trailing edge and then tapering it sure saves a lot of building time!

My fuselages had always been pretty simple to construct and did not require plans, so I stuck with the same arrangement. It is a little easier, though, for one who has never built one of these models to lay out the fuselage crutch and the plyon members over the plans.

Some will argue that square tips on the wing and stab are not as efficient as other shapes and this may be true. But, to my way of thinking, the difference is so small that it should not be taken into consideration—there being other factors such as warps, balance point, etc., which are so much more important by comparison.

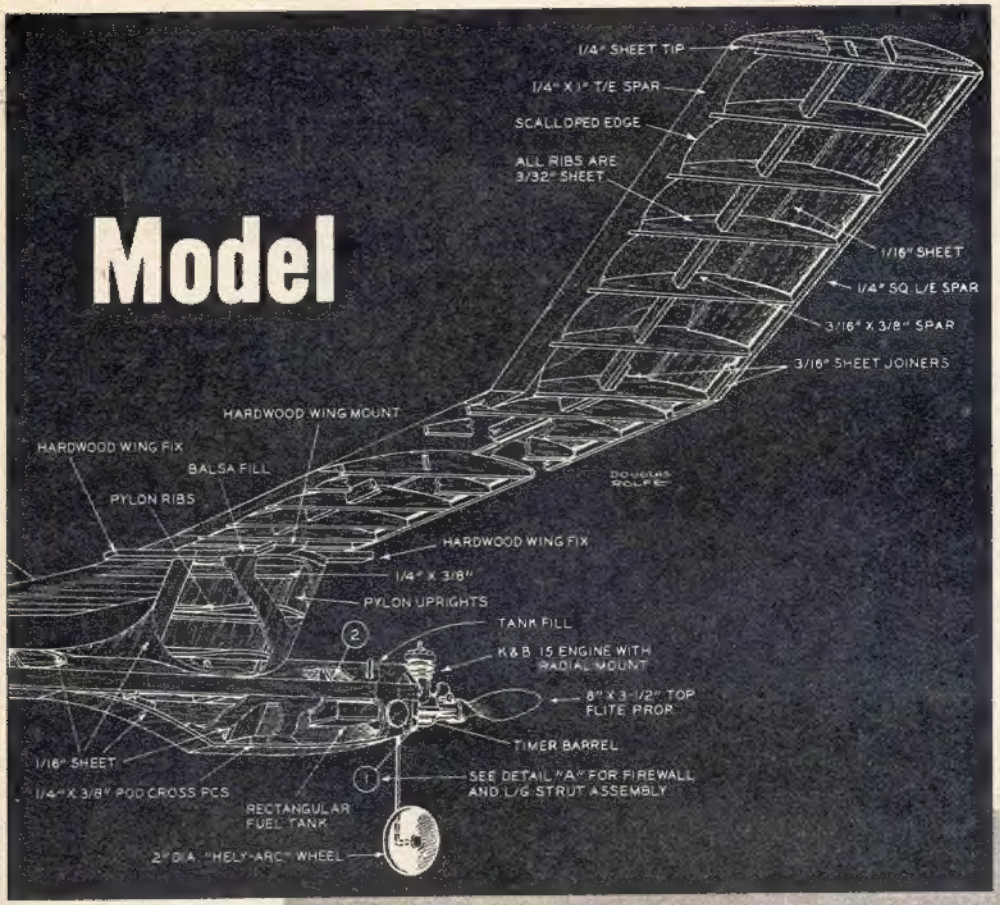
Contest wins with the basic *Senior Senator* design which seem most important have been as follows: first in Class A with an Arden .199 powered model at the Mirror Model Flying Fair; first in Class C with a Triumph .51 powered model with a total of 29:45.2 (out of a possible 30 minutes) at the Plymouth Internationals; third at the Nationals in Class C with a McCoy .49 powered model (same design as the Triumph model); first in Class A at the Tangerine Internationals with an Arden .199 powered model; and, of course, placing on the U.S. team twice with the *Senior Senator* (powered originally by a Cub .14 and later by a Torp .15) and, the greatest of them all, winning the Championship.

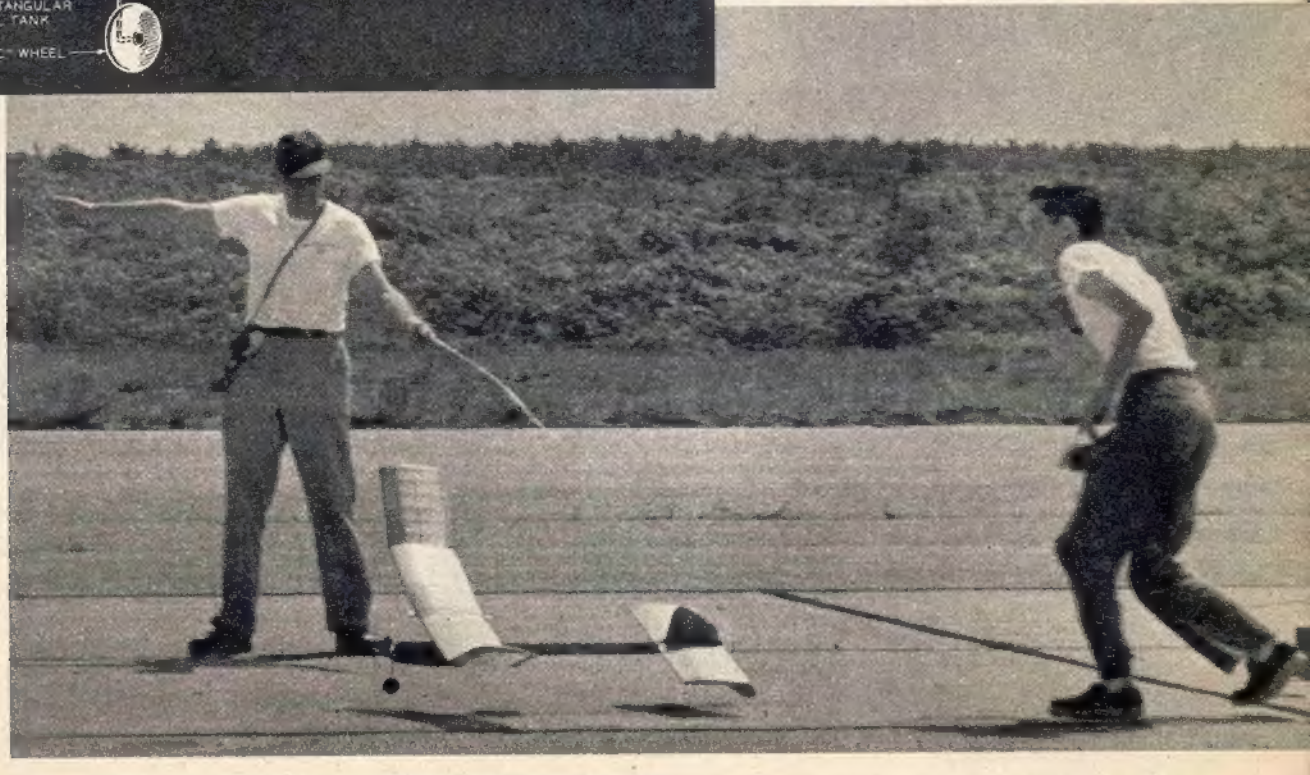
About the relatively thin, flat bottom airfoil used on this model, I have been a firm believer in undercambered airfoils similar to the NACA 6409 (or French curve equivalent) but seeing models like Denny Davis' *Hogan*, just to mention one, made me wonder if I wasn't on the wrong track and building several ½A models with thin, flat bottom airfoils made me wonder even more. The *Senior Senator*, believe it or not, was my first real attempt with a large model having a flat bottom airfoil and if you saw it fly, you would be ready to give a flat bottom airfoil a fling, yourself.

I've had a lot of people ask me about the scallops in the trailing edge of the wing and stab. They do have a function in the stab—to lighten it.

Adjusting the original *Senior Senator* for flight was not tricky at all though at first, before the sub-rudders were added, the model showed definite signs of lack of rudder area. I started out with absolutely no down or side thrust and the model flew perfectly with this arrangement for over a year. Then another warp set in and this required just a slight bit of left thrust—about two washers behind the K&B radial wing—to maintain a smooth left climb. So, I would recommend for initial test flying that the motor be set straight and the wing and stabilizer incidence angles be much the same as shown on the plans, providing the balance point is as indicated.

It is hard to get a real good indication of the model's adjustments by hand gliding but I recommend that flight tests start with hand gliding, anyway. This is done by trotting with the model held level or just slightly pointing downward



World Champion Carl Wheeley watches his model rise off the ground at F.A.I. meet.

above your head until you can just feel it lift and then releasing it with just a gentle push. The model, if the balance point and incidence angles are correct, should glide for something like 40 feet. Assuming that the balance point is correct, if the model has a steady descent much shorter than this, the trailing edge of the stabilizer should be raised slightly; if the model goes out level or upward for a short way and then drops off (a stall), the leading edge of the stabilizer should be raised slightly. The latter (stall) is most likely to be present and, if it is, instead of raising both sides of the stabilizer evenly, only the edge of the stabilizer which is on the inside of the glide circle, which probably is already prevalent, should be raised.

Once you have a smooth glide with a slight circle (either way —it doesn't matter, but it is best to have it glide the direction it naturally tends) you are ready for a powered test hop.

I like to make powered test flights with a motor run between 6 and 8 seconds and with the motor running as slow as possible and still smooth. You don't want the motor to conk out when you launch the model! Release the model for your powered flights just the way you did for a hand glide and note very carefully what it does on the first flight. With the motor running very slow the model should have a very shallow climb, maybe lower than 20 deg., and hardly any turn. If your model behaves like mine it will turn in the glide the same direction as the climb and this is best for transition from climb to glide. If the climb and glide directions are different, you will still get good performance but not the best possible. As you gradually rev up the motor, the angle of climb should increase and so should the rate of turn. Watch the turn, though, it can get dangerous!

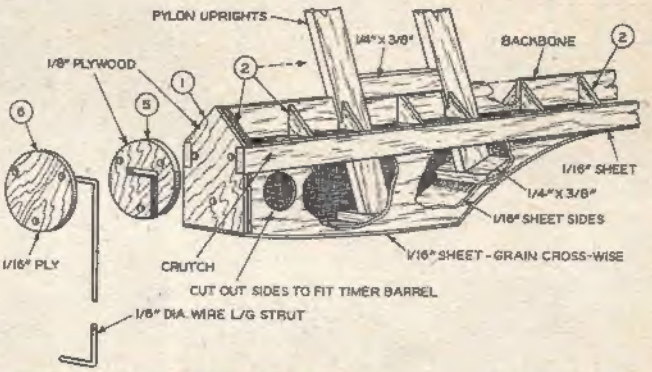
If after the motor is revved up gradually the model goes up for a short while, then maintains altitude in a sharp circle, don't go any farther without making some corrective adjustments. These should consist of either a slight turn of the rudder tab in the direction opposite of turn or slight motor side thrust. Should the model still not behave properly after trying these adjustments, it is best to try climbing the model in the opposite direction using the rudder and/or motor thrust to give the desired turn.

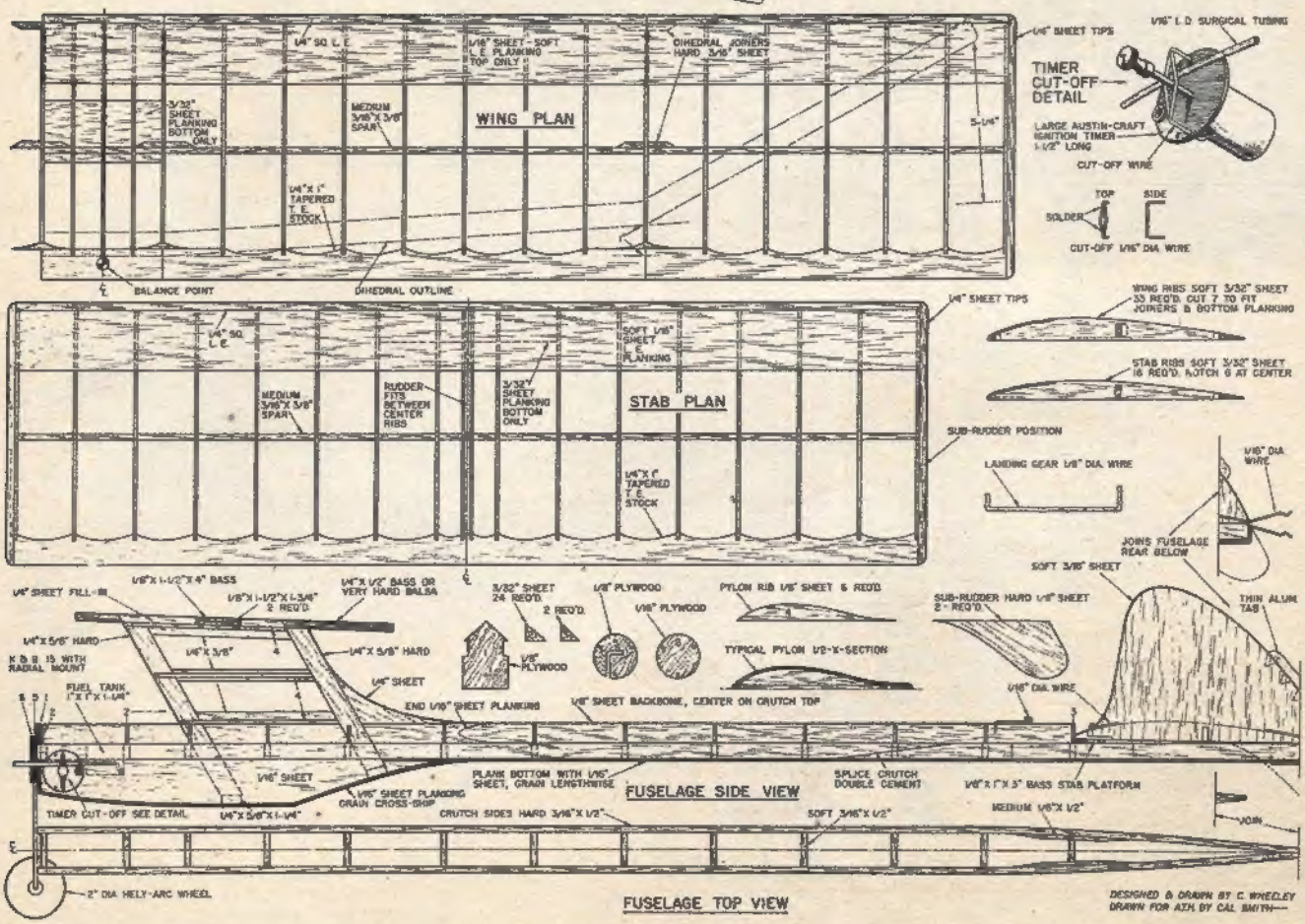
By the way, of the props I tried with the Cub .14 and the Torp .15, the Top Flite 8"D x 3½"P worked best.

What's the dead-air flight time for the *Senior Senator?* Well, it's doubtful if there is such a thing as real dead air but the closest approximation is very early on a calm morning, right after sunrise. Last year with these conditions and the model powered by a Cub .14, the model would clock approximately 4 minutes and 30 seconds with a 20-second motor run, rise-off-ground. This year, with a Torp .15, the flight duration with a 15-second motor run, R.O.G., was almost exactly three minutes (I think the warps which set in decreased the performance slightly). This gives you a time to aim for or beat but remember that in the heat of the day (and the heat of contest activity) it takes only a minor slip-up or downdraft to put you out of the running.

All excited? Now to work! Building the wing and stab are so conventional and simple with the rectangular tips that *I will only add a note or two about the planking which will be found on the full-size plans.*

**Full-size plans for Senior Senator are part of Group Plan # 55A from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (50¢)**



# OFFICIAL A.M.A. NATIONAL MODEL AIRCRAFT RECORDS

## Gas Models—Free Flight

| TYPE | CL. | AGE | TIME | DESIGN-MOTOR | HELD BY |
|---|---|---|---|---|---|
| ROG | ½A | Jr. | 18:56.0 | *Kiwi*—Atwood .049 | Don Puskarich Oildale, Calif. |
| | ½A | Sr. | 19:58.2 | *Spacer*—Space Bug | Kenny Kaelon Rosemead, Calif. |
| | ½A | Op. | 31:20.4 | Oxley—Space Bug | Harry C. Gould Long Beach, Calif. |
| | A | Jr. | 28:48.2 | *Zeek*—Torp .19 | Donald D. Rounds Los Angeles, Calif. |
| | A | Sr. | 25:13.0 | *Zeek*—Torp .15 | Robert Stucker Creve Coeur, Mo. |
| | A | Op. | 35:29.6 | *Spacer*—Torp .19 | F. L. Swaney Long Beach, Calif. |
| | B | Jr. | 16:16.6 | Original—Torp .29 | William L. Schlarb South Bend, Ind. |
| | B | Sr. | 27:42.0 | *Spacer*—Torp. 23 | Duane Eisenbeiss Long Beach, Calif. |
| | B | Op. | 34:00.4 | Original—Torp. 24 | Jack Oxley Artesia, Calif. |
| | C | Jr. | 14:40.6 | Mod. *Sailplane*—Torp .32 | Martin Wolff Downey, Calif. |
| | C | Sr. | 19:10.0 | Taibi-Orwick .32 | Duane Eisenbeiss Long Beach, Calif. |
| | C | Op. | 28:43.4 | Mod. *Sailplane*—Torp .32 | Jack Oxley Artesia, Calif. |
| ROW | ½A | Jr. | 7:11.8 | *Zeek*—Space Bug | Martin Wolff Downey, Calif. |
| | ½A | Sr. | 10:58.0 | *Spacer*—Thermal Hopper | Don Zink Compton, Calif. |
| | ½A | Op. | 15:48.6 | Callies-Alberts-Taylor—Space Bug | James P. Taylor Albuquerque, N. M. |
| ROW | A | Jr. | 2:15.2 | *Zeek*—Royal Spitfire | Jay Poggiali Hicksville, N. Y. |
| | A | Sr. | 13:33.0 | Original—Torp .15 | Robert Cherny Sacramento, Calif. |
| | A | Op. | 14:05.0 | Original Torp .19 | Sal Taibi Lakewood, Calif. |
| | B | Jr. | 2:54.0 | Original—Torp .23 | Bill Spawr Compton, Calif. |
| | B | Sr. | 15:23.0 | *Spacer*—Torp .23 | Duane Eisenbeiss Long Beach, Calif. |
| | B | Op. | 13:00.6 | Original—Torp. 23 | Sal Taibi Long Beach, Calif. |
| | C | Jr. | | *No Record Established* | |
| | C | Sr. | 16:57.0 | Russ Johnson—Torp .32 | Bobby Jones San Gabriel, Calif. |
| | C | Op. | 16:05.2 | *Sailplane*—Orwick .32 | Harry C. Gould Long Beach, Calif. |
| PAA Load | ½A | Jr. | 13:15.2 | *PAA Master*—Atwood | Don Puskarich Oildale, Calif. |
| | ½A | Sr. | 13:05.0 | *PAA Master*—McCoy Diesel | Lloyd Miles Medford, Ore. |
| | ½A | Op. | 17:43.0 | *Lift-Master*—Atwood .049 | Thomas Henebry Chula Vista, Calif. |
| | AB | Jr. | 9:27.2 | Original—Torp .19 | Martin Wolff Downey, Calif. |
| | AB | Sr. | 15:22.6 | Mod. Spacer—Torp. .19 | Jack R. Potts Paramount, Calif. |
| | AB | Op. | 23:05.2 | Kelley-Mahieu Fox .19 | Edward C. Kelley Inglewood, Cal. |
| PAA Clipper Cargo | | Jr. | | *No Record Established* | |
| | | Sr. | 15½ ozs. | Original—Atwood .049 | Kenny Kaelon Rosemead, Calif. |
| | | Op. | 32¾ ozs. | Original—Thermal Hopper | Robt. Moncrieff Torrance, Calif. |

## Gas Models—Control Line Speed

| CL. | AGE | SPEED | DESIGN-MOTOR | HELD BY |
|---|---|---|---|---|
| ½A | Jr. | 74.97 | Original—Thermal Hopper | Robert Chojnacki Perth Amboy, N. J. |
| ½A | Sr. | 85.76 | Original—Thermal Hopper | V. Warren Kurth W. Lafayette, Ind. |
| ½A | Op. | 94.70 | *Hell Razor*—Space Bug | J. E. Morrell Bristol, Va. |
| A | Jr. | 126.71 | Original—Torp .19 | Robert Giles Irvington, N. J. |
| A | Sr. | 126.71 | Original—Torp .19 | Walter Vrablic Perth Amboy, N. J. |
| A | Op. | 141.23 | Original—Hornet .19 | Edward V. Hicks Greensboro, N. C. |
| B | Jr. | 130.38 | Original—Dooling .29 | Walter Pyron Decatur, Ga. |
| B | Sr. | 131.05 | Original—Dooling .29 | Ken Hale Dallas, Texas |
| B | Op. | 145.69 | *Hell Razor*—Dooling .29 | Harry Roe, Jr. Dayton, Ohio |
| C | Jr. | 149.07 | Mod. Hell Razor—McCoy .60 | Wm. Weissbrodt Milwaukee, Wisc. |
| C | Sr. | 155.11 | Original—McCoy .60 | Paul Hutt Brooklyn, N. Y. |
| C | Op. | 160.51 | Original—McCoy .60 | Leland Morton Dallas, Texas |

## Indoor Models

| TYPE | CL. | AGE | TIME | DESIGN-MOTOR | HELD BY |
|---|---|---|---|---|---|
| H.L. Stick | B | Jr. | 21:08.2 | Orig. by F. Cummings Jr. | Ronald Cummings Los Angeles, Calif. |
| | B | Sr. | 25:37.6 | Original | Don Kennedy Burbank, Calif. |
| | B | Op. | 26:53.6 | Original | W. F. Tyler New City, N. Y. |
| | C | Jr. | 25:20.4 | Orig. by F. Cummings, Jr. | F. Cummings III Harbor City, Calif. |
| | C | Sr. | 24:52.6 | Original | A. D'Alessandro Philadelphia, Pa. |
| | C | Op. | 32:19.8 | Original | Pete Andrews Forest Hills, N. Y. |
| | D | Jr. | 15:06.4 | Orig. by Atwood-Poggen | Paul Simon Detroit, Mich. |
| | D | Sr. | 22:54.6 | Original | Thomas Greet Philadelphia, Pa. |
| | D | Op. | 30:37.2 | Original | W. F. Tyler New City, N. Y. |
| ROG Cabin | B | Jr. | 12:42.3 | Original | H. Kaczynski Detroit, Mich. |
| | B | Sr. | 15:09.3 | Original | David Call Philadelphia, Pa. |
| | B | Op. | 18:44.6 | Original | Don Kennedy Burbank, Calif. |
| | C | Jr. | 11:32.3 | Original | R. Jagiello (Dcs'd) Chicago, Ill. |
| | C | Sr. | 16:52.5 | Original | Erwin Rodemsky Detroit, Mich. |
| | C | Op. | 25:26.6 | Original | James B. Grant Manchester, Conn. |
| ROW Cabin | B | Jr. | 0:37.6 | Original | Hermann Andresen Chicago, Ill. |
| | B | Sr. | 13:13.0 | Original | David Call Philadelphia, Pa. |
| | B | Op. | 11:17.0 | Original | David Call Philadelphia, Pa. |
| Autogiro | | Jr. | 3:53.7 | Original | Edward Vargo Chicago, Ill. |
| | | Sr. | 2:51.2 | Original | Ralph Brown (Dcs'd) Arlington, Mass. |
| | | Op. | 2:45.5 | Original | Joseph Matulis Chicago, Ill. |
| Ornithopter | | Jr. | 1:18.0 | Original | Edward Vargo Chicago, Ill. |
| | | Sr. | 3:22.0 | Original | John Bock Chicago, Ill. |
| | | Op. | 4:05.4 | Original | Carl Goldberg Chicago, Ill. |
| Helicopter | | Jr. | 3:54.6 | Original | Richard Quermann Bayside, N. Y. |
| | | Sr. | 5:34.4 | Original | James Broderick Chicago, Ill. |
| | | Op. | 5:25.0 | Original | Carl Goldberg Chicago, Ill. |
| HL Glider | | Jr. | 0:52.7 | Original | Craig Sorensen Montebello, Calif. |
| | | Sr. | 1:06.2 | Orig. by Brawner | Jack Ritner San Francisco, Calif |
| | | Op. | 1:16.4 | Original | Robert Dagand Los Angeles, Calif. |

## Outdoor Models—Rubber and Glider

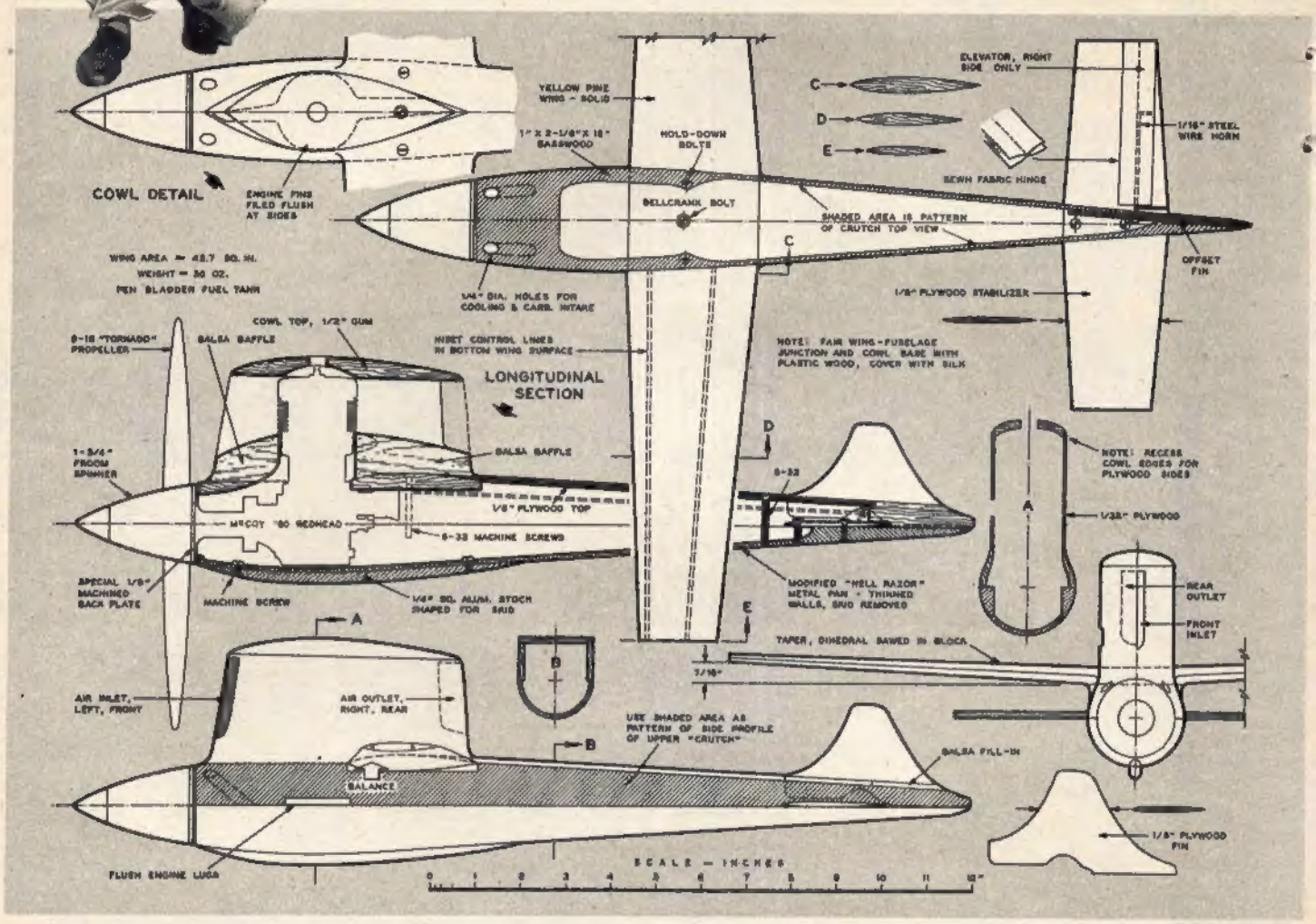
| TYPE | AGE | TIME | DESIGN | HELD BY |
|---|---|---|---|---|
| Limited Rubber | Jr. | 14:30.4 | Original | Joseph White Sacramento, Calif. |
| | Sr. | 21:52.0 | Original | Charles Sotich Chicago, Ill. |
| | Op. | 17:08.8 | Original | Patricia Lidgard Royal Oak, Mich. |
| Limited Rubber ROW | Jr. | 1:56.4 | Original | Robert Patchin Hawthorne, Calif. |
| | Sr. | | *No Record Established* | |
| | Op. | 3:31.0 | Original | Fudo Takagi San Diego, Calif. |
| Wakefield | Jr. | | *No Record Established* | |
| | Sr. | 14:49.0 | Original | James Bowers Cleveland, Ohio |
| | Op. | 18:18.0 | Original | L. R. DeBatty Oaklawn, Ill. |
| Autogiro | Jr. | | *No Record Established* | |
| | Sr. | 0:20.2 | Original | Wm. F. Foshag Washington, D. C. |
| | Op. | 0:50.4 | Original | Parnell Schoenky Kirkwood, Mo. |
| Ornithopter | Jr. | | *No Record Established* | |
| | Sr. | 1:25.4 | Mod. Lippisch | Wm. R. Bigge Washington, D. C. |
| | Op. | 3:25.8 | Original | Parnell Schoenky Kirkwood, Mo. |
| Helicopter | Jr. | 2:11.4 | Orig. by Robbers | Thane Bopp Kirkwood, Mo. |
| | Sr. | 5:22.6 | Original | H. Robbers, Jr. Oakland, Calif. |
| | Op. | 8:55.0 | Original | Frank Ehling Jersey City, N. J. |
| HL Glider | Jr. | 11:57.6 | Original | William Schlarb South Bend, Ind. |
| | Sr. | 10:42.4 | Original | Hermann Andresen Chicago, Ill. |
| | Op. | 13:00.6 | Original | Joe Bilgri San Jose, Calif. |
| TL Limited | Jr. | 12:10.8 | Orig. by R. F. Watson | John Watson Ft. Des Moines, Ia. |
| | Sr. | 11:46.0 | Original | Gable Ray Smyrna, Ga. |
| | Op. | 12:13.0 | Original | George Perryman Decatur, Ga. |
| Nordic TL | Jr. | | *No Record Established* | |
| | Sr. | 13:20.0 | Original | Buddy Yeates Yuba City, Calif. |
| | Op. | 13:00.0 | Original | Joe Bilgri San Jose, Calif. |

## Jet Models—Control Line Speed

| | | | |
|---|---|---|---|
| Jr. | 143.25 | Johnson-Walsh Dyna-Jet | Mike Dawson Galesburg, Ill. |
| Sr. | 157.69 | Original Dyna-Jet | Herbert L. Davis Birmingham, Ala. |
| Op. | 154.98 | Original Dyna-Jet | J. Dale Kirn Brooks AFB, Texas |

# Two-line Speed Plane: the 160.5 mph "MONITOR"

## National Record Holder




■ My modeling career started at an early age with rubber power models; I started flying free flight gas models in 1939. Then when U-control came along I learned how to fly an original speed ship with an Ohlsson .23 engine with a top speed of 60 miles an hour. Later, finding Fireballs and my own designs more enjoyable to fly, I learned stunt and precision while working in a hobby shop. As contests became more numerous I flew stunt at most of them, winning a few trophies and engines. Then combat became the thing. I did very well in combat but lost too many airplanes.

What led me to building the "Speed Monitor" was my last combat ship. Considerable design and construction hours were put into it and at its first contest it was completely destroyed—unnecessarily. I was very discouraged, so I built speed ship #13 using some original ideas that didn't jibe with the experts. This is the plane that "Doesn't Have It!" By that I mean as far as possible anything that would tend to hold it back was eliminated.

It features a "pressure ease" cowl based on a theory that if properly channeled there is enough ram air to cool the engine, eliminate hot spots and prevent air from stacking up in front of the cowl. The engine is a stock engine and the fuel was stock fuel ("This-Is-It" hopped up). The prop was a stock 9/12 Tornado. The engine was Liqua-Moly treated before it was run. First flight right out of the box was 155.11, which broke the national record. Second flight was 153 at the first record trials held in Dallas. It wasn't flown at the second record trials because of the weather. At the third trials held February 21, it turned 156.32 first flight and 160.51 second flight with a stock 9/12 Tornado and stock fuel pepped up a bit.

The construction method is not new inasmuch as crutch types have been used some 15 years or more. It is, however, entirely hard wood except the channeling inside the cowl which is balsa. You start by grinding the fins off on each side of your engine until they are flush with the outer screws in the head, covering up and protecting the engine where necessary. This is done to reduce frontal area.

A Hell Razor pan was used, and modified by cutting rear skid off and filing all excess metal off. The engine was then mounted. A 1¾ Froom spinner was used with a ⅛ back plate turned on a lathe to keep it from binding on the fuselage when you tighten the prop. The fuselage top was sawed out to the shape of the pan, using a piece of basswood ¾" x 2½" x 18"; then sawed to take engine.

Next the wing was laid out; the dihedral was cut with a hand saw before laying out the outline. The airfoil is a

perfectly symmetrical section which according to theory flies at a slight positive angle of attack. I couldn't find anyone who could measure it while it was flying 155.11 or 160.51, so theoretically it's inefficient, but there was no "lift" holding it back.

The rudder was made of ⅛" plywood

**By**
**LELAND S. MORTON, JR.**

**Full-size plans for Speed Monitor are part of Group Plan # 55A from Hobby Helpers, 770 Hunts Point Avenue, New York 59, N. Y. (50¢)**

and offset 3 degrees to help follow the circle. Fuselage top was planked with ⅛" plywood extending from the two-thirds point on the wing to about midway of the rudder. The remaining distance was filled in with scrap balsa because of working ease. The elevator was ⅛" plywood; both elevator and rudder are symmetrically shaped. The cowl sides of 1/32" plywood are glued to the top of the fuselage and wing. The balsa channeling was put in before the top (which is recessed) was glued in place. Be sure and tape your cylinder head with about a 1/64" layer of masking tape to give side clearance when fitting. After the cowl is finished carve the front of the fuselage to fit the spinner, tapering up into the cowl.

Plastic Wood was employed to make fillets on cowl and wing. Cover all fillets with raw silk.

Finish as desired.



# DIRECTORY OF AMERICAN MODEL CLUBS

■ In each of its post-war editions "Air Trails Model Annual" has presented a directory of model clubs. This list is maintained through the cooperation of hundreds of club officials across the country. Those clubs appearing here responded to a mail questionnaire or their names were furnished by one of the national model groups. Organizations which do not appear here but are active are urged to register immediately by filling out the listing coupon which appears in this publication.

## HOW TO USE DIRECTORY

The contact man's city is the same as that of the club unless otherwise listed after his street address. In some areas where a state line borders a city the contact man may live in another city in the adjoining state. In such instances check the adjoining state's listing.

Where complete information has been provided the following appears in this order under the state title: 1) name of city; 2) name of club; 3) major activity of club; 4) contact man, his title, and his address; 5) his telephone number; 6) number of members in the club; 7) year in which club was established.

Under name of club the following abbreviations have been utilized: AC—Aero Club; FC—Flying Club; FMC—Flying Model Club; GMC—Gas Model Club; MAA—Model Aeronautics Association; MAC—Model Airplane Club; MBC—Model Boat Club; MC—Model Club; MPBC—Model Power Boat Club; MRCC—Model Race Car Club; MYRC—Model Yacht Racing Club; R/C—Radio Control; YA—Yacht Association.

Under major activity of club the following abbreviations have been used: P—Model Planes; B—Model Boats; C—Model (Miniature) Cars; T—Model Trains; the notation (R/C) following any of the preceding means that activity is confined solely to radio controlled craft.

Under contact man's address the word "street" is understood unless Ave., La., Pl., etc., appears. Under contact man's telephone number the exchange is given in capital letters where one exists.

Where a club name has been supplied by a national group acknowledgement is made at the end of the listing by AMA (Academy of Model Aeronautics), AMRCA (American Miniature Racing Car Association) or IMPBA (International Model Power Boat Association).

Corrections or changes in listing should be filed promptly. All that is necessary is for the contact man to fill out and mail a new listing coupon indicating that it replaces a current club listing.

## DIRECTORY OF AMERICAN MODEL CLUBS

**Arizona:** *Chandler* Aero-Modelers—P—Special Services Officer, Williams Air Force Base (AMA). *Glendale* West Side Model Knights—P—Richard McGraw, 403 N. 7th Ave. (AMA). *Phoenix* PMAC—P—Wayne Ross (sec.), 1706 E. Montecito Ave.; AM 5-9622; 40; 1931. *Tucson* Cholla Choppers—P—Frank Townsend (advisor), 2751 N. Campbell Ave.; Tel 5-0112; 17; 1946. *Tucson* Thermaleers—P—Edith Downs (sec.), 1035 E. 6th (AMA).

**Arkansas:** *Fort Smith* Flight Masters—P—Bill Minnis, 511 N. 22nd St.; Tel. 3-5398; 12; 1953.

**California:** *Alameda* Aero Modelers—P—Donald Schreiber (sec.), 2146 San Antonio Ave.; LA 2-2769; 35; 1939. *Arcadia* Southern Cal. MPB&YA—B—Al Wood (commodore), 154 W. Haven. *Bakersfield* Gas Modelers—P—Francis Stewart, 900 21st St. (treas.); FA 3-3346; 21; 1937. *Berkeley* Northern Cal. MPBC—B—Ken & Les Hobby Shop, 1751 Solano Ave. *Carmichael* Skyoneers—P—Howard James, 5811 Marconi Ave. (pres.); IV 9-6571; 47; 1938. *Ceres* Robots—P—Galen Rydelius (sec.), 1666 Margaret Way (AMA). *Fresno* Controlliners—P—Al White (treas.), 2406 Floradora Ave.; Tel. 3-0969; 35; 1952. *Fresno* FGMAC—P—Ocie Randall (publicity chmn.), 716 Waterman Ave.; Tel. 4-1929; 32; 1939. *Hayward* Flying Kilroys—P&B—Jack Stanton, 934 A St.; LU 2-3056; 25; 1947. *Hollywood* Smog Town Prop Twisters—P—David Cleveland, 6370 Deep Dell Pl.; HO 2-5182; 20; 1952. Open only to members of Boys Club. *Lakewood* Flying Blue Angels—P—Dave J. Daniels (v.p.), 6143 Freckles Rd.; L.B. 5-6229; 18; 1954. *Long Beach* ThunderBugs—P—F. L. Swaney, 527 E. 55th St.; Tel. 2-7515. *Los Angeles* MBC—B—Bill Baughman, 3432 W. 43rd St. *Los Angeles* Highland Modelers—P—Henry E. Vrbsky (corres. sec.), 5944 Echo; CL 6-0440; 65; 1946. *Los Angeles* Model Hobby Assoc. C. Reisman (sec.), 401 Lake Manor Rd., Canoga Park. *Los Angeles* Modeleers MC—P&B&C—Don L. Thompson (advisor), 9000 National Blvd.; VE 8-3442 (days); 45; 1953. *Los Angeles* Radio Controleers—P(R/C)—D. P. Kenney (pres.), 733 N. Harper Ave.; WY 4634; 93; 1947. *Los Angeles* Westchester Wings—P—Robert Linn (director), 6600 W. 82nd; OR 1-9012; 40; 1953. *Mar Vista* Cinema Hobby Club—B&C&T—A. F. Bruns (sec.), 10740 Woodbine, Westside Village, Palms, Los Angeles; VE 8-0935; 75; 1941. *Napa* Hell's Angels—P—P. A. Green, 120 Fairview Dr. (AMA). *N. Sacramento* Capitol Screamliners—P&B—Chester Colby (treas.), 2105 Del Paso Blvd.; WA 5-0472; 35; 1943. *Oakland* East Bay R/C—PAB(R/C)—D. W. Root (publicity

# DIRECTORY OF MODELING CLUBS

**California** (*Continued*)
chmn.), 6036 Telegraph Ave.; HU 3-4543; 35; 1952. *Oakland* Two-Cycle Terrors—P—D. W. Root (sec.-treas.), 6036 Telegraph Ave.; HU 3-4543; 20; 1949. *Oakland* Cloud Dusters—P—Joe Bilgri (sec.), 256½ Locust, San Jose; CY 2-4788; 25; 1934. *Oceanside* Prop Spinners—P—D. S. Cox, 122 S. Clementine (AMA). *Ontario* Valley High MRCC—C—Edward Baynes, 218 Plaza Serena (AMRCA). *Ontario* MBC—B—R. L. Brown, 1743 S. Magnolia (can supply info on Riverside, Ontario, Chino and Corona boat activity). *Patterson* Aerial Robots—P(R/C)—Ray Morgan, Box 72; TY 2-5311; 16; 1950. *Sacramento* Aero Aces—P—Howard James (sec.), 5811 Marconi Ave., Carmichael; 18. *San Bruno* Aerobats—P—Don Howard (sec.), 763 Elm; JU 8-1660; 26; 1951. *San Diego* Aeroneers—P—A. E. Rominger (pres.), 4866 Mansfield Ave.; AT 4-2096; 30; 1935. *San Diego* Airliners—P—Harold Ledington, 4115 Cherokee (AMA). *South San Francisco* MYRC—B—Jeanne M. Stout (sec.), 11 Tunitas La.; JU 8-2550; 40; 1936. *San Francisco* MBC—B—H. J. Barker, 10167 S. Memphis, Whittier. *San Francisco* Vultures—P—Bob Risvold (pres.), 1801 Ocean Ave.; JU 4-3919; 75; 1932. *San Leandro* Flying Vampires—P&B—E. M. Geritz (advisor), Bancroft Jr. High, 1150 Bancroft Ave.; SW 8-9065. *San Leandro* Line Twisters—P—Steve Merciel (v.p.), 596 E. 14th; LO 8-1891; 25; 1948. *San Lorenzo* Elmhurst Prop Busters—P—U. D. Peters (sec.), 17281 Via La Jolla; LU 1-0984; 30; 1938. *San Mateo* Peninsula Prop Twisters—P—Joan Calkins (sec.), 3703 Southwood Ave.; FI 5-0930; 25; 1945. *Santa Barbara* Modelers—P—Stan Hill (sec.), 259 Dawlish Pl.; Tel. 9-7113; 20; 1936. *Van Nuys* San Valeers—P—Bill Krecek, 8151 Matilija Ave. (AMA). *Watsonville* Aero Cats—P—E. A. Rusconi (pres.), 224 Locust; Tel. 2-1264; 19; 1950. *Whittier* MBC—B—H. J. Barker, 10167 S. Memphis. *Willits* Mendocino Model Mashers—P—Joe Requa (sec.), Rt. 1, Box 57B; 8; 1952.

**Colorado:** *Aurora* Prop Busters—P—Dewey W. Beach, 2065 Ironton (AMA). *Grand Junction* Modeleers—P—Ralph Mulford (advisor), 379 Redlands Rd.; Tel. 0253J5; 30; 1953. *Pueblo* Modelers Unlimited—P—Mrs. W. D. Barter, 822 E. 14th (AMA).

**Connecticut:** *Bridgeport* Aeronuts—P—Stephen Belletsky, Jr., N. Bulkley Ave., Westport (AMA). *Hartford* Greater Hartford MAC—P—Robert Wallace (sec.), 29 Wheeler Rd., Wethersfield (AMA). *Meriden* Model Maniacs—P—Chester Orrill, Jr. (pres.), 47 Carpenter Ave.; Tel. 5-9861; 25; 1951. *New Britain* NBMAC—P—Mike Adajian, 39 Brooklawn; BA 3-2139; 26; 1947. *Stamford* Aeromodelers—P—Doug Lanyon, 17 Oak; Tel. 3-8877; 30; 1953. *Wallingford* Lufbery Circleers—P—Theodore Koblish (pres.), 180 S. Orchard; Tel. 9-4739; 49; 1950. *Waterbury* Modeleers—P—J. E. Gray (pres.), c/o Albion Bike Shop, 713 E. Main; Tel. 6-1230; 25; 1951.

**Delaware:** *Wilmington* R/C Sky Blazers—P—Robert Scott (pres.), 18 Louise Rd., Chelsea Estates, New Castle; Tel. 7825; 11; 1954.

**District of Columbia:** *Washington* Plane Slingers—P—Fred Schneck, 2344 Iverson, S.E., Hillcrest Hts.

**Florida:** *Clearwater* Screaming Demons—P—Hobby Center, 425 Laura (AMA). *Daytona* Modelmasters—P&B&C—W. T. Thomas (pres.), 105 N. Halifax Ave., Daytona Beach; Tel. 8049; 20; 1940. *Delray Beach* Ocean City Modeleers—P—W. R. Bell, III, 133 N.E. 2nd Ave.; Tel. 7290; 20; 1953. *Ft. Lauderdale* Gold Coast Modeleers—P—Steve Sharrow, 2182 Wilton Dr. (AMA). *Jacksonville* Flying Rebels—P—Clifford Hampson (sec.), 5269 Park; Tel. 88-0589; 50. *Miami* Hi Flyers—P—Vera Severns (advisor), 6043 N.W. 29th Ave. (AMA). *Miami* Modeleers—P—William Lumley (pres.), 9028 N.W. 22nd; Tel. 78-2910; 44; 1952. *Miami* Tropic Aeros—P—C. R. Quick (pres.), 1896 N.W. 36th; Tel. 65-9186; 50; 1944. *Miami Springs* Aerobats—P—C. A. Chase, Sr., 385 Minola Dr. (AMA). *N. Miami* Prop Busters—P—Robert Henning (pres.), c/o Whitten Hobby Shop, 12715 N.E. 6th Ave. (AMA). *Tallahassee* Prop Busters—P—Jimmy Gibson (pres.), 1551 Christobal Dr.; Tel. 2-3312; 8; 1954. *Vero Beach* Prop Jockeys—P—Dennis Wood, 1606 24th Ave. *W. Palm Beach* Aero Club—P—John Temple, Jr., 510 Clematis (AMA). *W. Palm Beach* Cloud Busters—P—3628 S. Dixie Hwy. (AMA).

**Georgia:** *Albany* Aero Club—P—C. E. Bentley, 105 S. Jackson (AMA). *Atlanta* MRCC—C—M. A. Olson, 861 Vedado Way, N.W. (AMRCA).

**Idaho:** *Caldwell* Aero League—P—Vern Clements, 711 N. 9th, Box 608; Tel. 9-2889; 17; 1952. *Idaho Falls* Aero Circus—P—Donald Barrus (pres.), 1540 Beverly Rd., Tel. 1526W; 30; 1953.

**Illinois:** *Belleville* MRCC—C—Webb Klingenhagen, 721 S. "L" (AMRCA). *Chicago* MRCC—C—John Sybrandt, 210 6th, Willmette (AMRCA). *Chicago* MPBA—B—John Matthew (commodore), 1627 W. 106th (IMPBA). *Chicago* Harvey MRCC—C—John Carlson, 8045 Crandon Ave. (AMRCA). *Chicago* Aeronuts—P—Charles Sotich (sec.), 3851 W. 62nd Pl.; RE 5-1353; 20; 1936. *Chicago* Model Manglers—P—Mrs. R. Wiktorin, 3617 W. 31st (AMA). *Chicago* Balsa Wasps—P—Edward Neth (treas.), 10435 S. Albany Ave.; HI 5-5869; 40; 1954. *Chicago* Model Buggs—P—Merle Brewer (treas.), 7650 Irving Park Rd.; GL 6-7317; 35; 1951. *Chicago* Model Makers—P—George Ricci, 6053 W. Melrose; PE 6-7101. *Chicago* Model Nuts—P&B&C—Robert Yurkowski, 5112 N. Newland Ave.; NE 1-1578; 25; 1939. *Chicago* Prop Nutz—P—Lew Groebe (sec.), 11300 S. Bell; BE 8-5577; 26; 1952. *Chicago* R/C Club—P&B&C—Sidney Peterson (sec.), 6805 S. Artesian Ave.; PR 6-6177; 20; 1954. *Chicago* U-Line Pilots—P—Fritz Lindgren (advisor), 3622 N. Marshfield Ave.; GR 7-1039; 46; 1945. *Chicago* Washburne GMC—P&B&C—A. J. Heinmiller (sponsor), 1225 Sedgwick; MO 4-4523; 28; 1939. *Danville* Flying Foolz—P—Ronnie Byers (pres.), 217 E. Fairchild; Tel. 3607-J; 7; 1948. *DeKalb* Cloud Dusters—P—Dutch Hess (publicity chmn.), 137½ E. Lincoln; Tel. 6-5318; 38; 1944. *Des Plaines* Piston Poppers—P—H. E. Swanson (sec.), Rt. 2, Box 333; VA 4-7584; 25; 1954. *Galesburg* GMAC—P—Ray Johansen (treas.), 181 N. Cherry; Tel. 4630; 24; 1939. *Joliet* JMAC—P—Joe Brown (v.p.), 1512 Jones (AMA). *Lombard* Tree Town Modelairs—P—George Sullivan, 526 S. Lombard Ave. (AMA). *Marion* Egyptian Aero Club—P—Edward Aikman (contest director), 1020 N. Market; Tel. 252; 28; 1947. *Oaklawn* Aero Modelers—P—Keith Weber, 5258 W. 90th (AMA). *Ottawa* Streator Model Busters—P—Howard Helm (sec.), 920 W. Main; Tel. 3026-Y; 25; 1941. *Quincy* Hawks—P—Harold Daebelliehn (advisor), 2020 Ohio; Tel. 5222-W; 15; 1953. *Rockford* Aero Aces—P—H. E. Heminger, 836 Diamond Ct.; Tel. 4-8416. *Rock Island* Rock Island-Moline AC—P—John Murphy, 4015 14th Ave.; Tel. 8-1776; 24; 1940. *Springfield* Cloudhoppers—P—Richard Strode, 634 Eastman Ave. (AMA).

**Indiana:** *Anderson* AMRCC—C—Bill Cronin, Hartford City (AMRCA). *Avilla* Little Aviators—P&B—Robert Leatherman (pres.), RR No. 2; Tel. Kendallville 525-2; 20; 1953. *Bloomington* Aero Modelers—P&B—Steve Hoadley (sec.), 108 N. Grant; Tel. 5042; 30; 1954. *Connersville* Sky-Hawks—P—David Carroll (sec.), 217 W. 8th; Tel. 9126; 48; 1950. *Evansville* MRCC—C—K. E. Craig, 309 N. Willow Rd. (AMRCA). *Gary* Sky Riders—P—J. A. Stratton, 828 W. 25th Ave.; Tel. 2-8970; 23; 1952. *Greensburg* Knuckle Knockers—P—Charles Darnell, 134 N. Franklin; Tel. 2-6645; 10; 1954. *Monticello* Prop Busters—P—Charles Harlan (contest director), RR #5; Tel. 1158-J; 12; 1950. *Newcastle* MRCC—C—Russell Harter, 805 S. 20th (AMRCA). *South Bend* Buzz Bugs—P—Jack Greene, 1143 E. LaSalle (AMA). *Terre Haute* Model Aero Bugs—P—Ronald Divine (pres.), 677 6th Ave.; Tel. 0660; 6; 1953. *W. Lafayette* Purdue Aeromodelers—P—Walter Caldwell (sec.), c/o Purdue Memorial Union; Tel. Purdue op., Sta. 7; 40; 1939.

**Iowa:** *Ames* Sundusters—P—Don Jehlik, 1218 Ridgewood; 8; 1954. *Cedar Rapids* Hawkeye Aeroneers—P—Paul Marchal, Jr., 1837 8th Ave., S.W.; Tel. 3-6640; 14; 1939. *Sioux City* Helldivers—P—Mrs. Corletta Reinhold (sec.), Rt. #3, Talbot Rd.; Tel.

**HOW TO ENCOURAGE MORE MODEL MEETS**

**DRAWINGS BY CLARENCE WELLS**

Reprinted from "The Flyspeer"


Arrive at the competition well ahead of the registration deadline; smile.

5-9689; 43; 1938. *Waterloo* Flying Aces—P—Wilcox Hobby Shop, 416 W. Parker (AMA). *Waterloo* Prop Twisters—P—219 Forest Ave. (AMA).

**Kansas:** *Almena* Model Builders Club—P&B&C—Elden Sprague (pres.); 23; 1951. *Great Bend* Circle Dusters—P&B—Bob Arnett (pres.), c/o Phillips Sporting Goods; Tel. 3291; 25; 1954. *Hayes* Flying Aces—P—Dale Park (pres.), Box 272; Tel. 4-3145; 15; 1953. *Osawatomie* Modeleers—P—Alvin Scott (pres.), 218 Carr; 20; 1953. *Pittsburg* Modelers—P—Paul McBeath (pres.), Box 65, 204 W. Lincoln; FR 5222; 22; 1953. *Tipton* Modelairs—P&B—Bill Wiese (pres.); 8; 1953. *Wichita* Wichihawks—P—Roderick Combs (sec.), 3100 Fairhaven Dr.; JA 4-6694; 58; 1950.

**Kentucky:** *Louisville* LMC—P&B&C—H. O. Wise (sec.), 2802 Rodman; CA 1026; 40; 1946. *Owensboro* MAC—P—Perry Wilson (pres.), 2628 New Hartford Rd.; Tel. 3-3349; 63; 1947.

**Louisiana:** *Alexandria* Flying Pelicans—P—Donald Smith (v.p.), 49 Linda Rd.; Tel. 3-3572; 12; 1950. *Bastrop* High Flyers—P—Bennie Kincaid, 1617 W. Madison Ave.; Tel. 1746; 18. *Lake Charles* AFB Hi Fly'rs—P—M/Sgt Ed Cason (publicity chmn.), Hq 806th Air Base Group, Lake Charles AFB; HE 3-3330; 30; 1954 (open to USAF members only). *New Orleans* MRCC—C—William Wunderlich, 5211 Conti (AMRCA). *New Orleans* Aero Club—P—Whalen Norman (sec.), 334 Baronne; CA 7564; 114; 1938. *New Orleans* Corsican M.A.C.—P—Harold Hooper, Jr. (v.p.), 1228 Moss; GA 4363; 5; 1952.

**Maine:** *Auburn* Twin City M.C.—P—Glenn Dodge (sec.), 97½ Cook; 20; 1952. *Orono* American Legion MAC—P—William Kopp (director), 39 Mill; Tel. 6-8956; 70; 1953.

**Maryland:** *Baltimore* Baltimore MPBC—B—Andrew Balling (commodore), 910 Cooks Lane. *Baltimore* Aero-Craftsman—P—John Cochrane (pres.), 5811 Willowton Ave.; HA 8-4132; 15; 1939. *Baltimore* Model Flyers Assoc.—P—Joseph King, 3658 Dudley Ave. (AMA). *Baltimore* Controliners—P—c/o Durwood's, 442 Patapsco Ave. (AMA). *Baltimore* 104th Fighter Sq. MC—P—Maj. E. S. Szarowicz, 1119 Orems Rd. (AMA). *Bethesda* DC/RC—P(R/C)—Bill Saks (sec.), 6811 Fairfax Rd.; OL 4-5785; 70; 1952. *Bethesda* Klobbers Klub—P—Bob Tabler, Jr. (pres.), 9921 Monthuk Ave.; OL 4-5179; 45; 1952. *Glen Burnie* Balsa Butchers—P—F. G. Stroh, III (advisor), 18 Drum Point Rd.; GL 872, 30; 1950.

**Massachusetts:** *Boston* Aero Jockeys—P—Harold Saievetz (pres.), 241 Russett Rd., Chestnut Hill 67. *Fitchburg & Leominster* Sky Rovers—P—Rodney Christian (sec.), 43 Lincoln, Fitchburg; FI 3-9068; 30; 1953. *Hyannis* Cape Cod Aeromodelers—P—The Hobby Shop, 538 Main (AMA). *Norwood* Society of Model Engineers—P—Albert Trefethen (advisor), 163 Oakdale Ave., Dedham; DE 3-2076R; 45; 1947. *Pittsfield* Flying Maniacs—P—Leo Kozio 1 (sec.), 6 Hayes Pl.; Tel. 6398; 20; 1952. *Watertown* Nuckle Nickers—P—Hartwell Turner (advisor), 14 Centre; WA 3-1496; 30; 1953. *Worcester* Piston Pushers—P—Henry's Hobby House, 54 Trumbull (AMA).

**Michigan:** *Ann Arbor* Airfoilers—P&B&C—Al Temple (pres.), 9971 Doris Ave., Livonia, 60; 1952. *Azalia* Fly Boys—P—David Maricle, Box 49 (AMA). *Clawson* Flying Moose—P—Oscar Flor (sec.), 102 E. Tacoma (AMA). *Dearborn* Circle Burners—P—Don Kilgus (sec.), 216 S. Denwood (AMA). *Detroit* Balsa Bugs—P—Walter Hartung, 14759 Kilbourne Ave.; LA 7-7620; 26; 1942. *Detroit* Sky Guys—P—Joseph Dallaire, 9830 Wyoming Ave. (AMA). *Detroit* MPBC—B—Charles Baxmann (commodore), 2991 Garland Ave. (IMPBA) *Detroit* MRCC—C—Glenn Fairabend, 20242 Russell (AMRCA). *Detroit* R/C Club—P(R/C)—Ernie Kratzet (advisor), 1112 Book Bldg.; WO 1-4763; 40; 1952. *Detroit* Rev-Kats—P—c/o Tanners Hobbies, 14400 Mack (AMA). *Detroit* Royal Glo-Liners—P—Russell Symes, 18489 Hartwell (AMA). *Detroit* Strathmoor MC—P—Warren Bartlett, 14515 Asbury Park (AMA). *Detroit* Thunder Birds—P—c/o Harry's Hobbies, 12838 E. Jefferson (AMA). *Farmington* Flying Robots—P(R/C)—Arthur Ryan (pres.), 31770 Junction; FA 2306J; 10; 1954. *Grand Rapids* MC—P—Eldon Potter, 38 Jordan St., S.W.; CH 3-6421; 60; 1947. *Jackson* MRCC—C—F. L. Castle, 114 Wren (AMRCA). *Lincoln Park* Prop Spinners—P—Edward Teal (sec.), 1095 Harrison Ave. (AMA). *Milan* Aero Modelers—P—Carol Combs, 128 W. 2nd (AMA). *Mt. Clemens* Modelaires—P—John Held (pres.), 14 Hollywood Ct.; HO 8-5244; 30; 1952. *Wyandotte* Modelairs—P—Virginia McGrath, 3629 15th (AMA).

## NATIONAL MODEL CLUBS

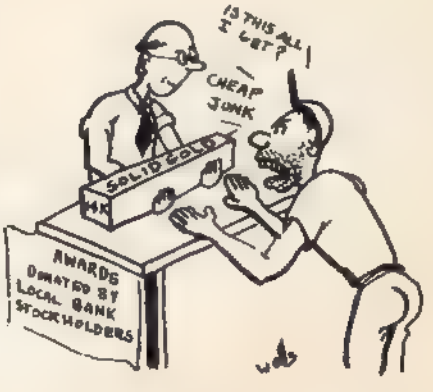
- American Miniature Racing Car Association, a national non-profit organization. Carl Noward, Secretary-Treasurer, 1384 Berdan Avenue, Toledo 12, Ohio.
- International Model Power Boat Association. Mrs. Margaret Baxmann, Secretary-Treasurer, 2991 Garland Ave., Detroit 14, Mich.
- Academy of Model Aeronautics, a division of the National Aeronautic Association. Russell Nichols, Executive Director, 1025 Connecticut Ave., N.W., Washington 6, D. C.
- National Model Railroad Association. Robert Bast, Box 1138, Canton, Ohio.
- Model Aeronautics Association of Canada, 2109 Bleury St., Montreal, Quebec.

**Minnesota:** *Austin* Aero Antics—P—Chuck Accurso, 1105 W. Allegheny; 7; 1954. *Mankato* Modeleers—P—Jim Anderson (pres.), 105½ Hanover; Tel. 8-3043; 28; 1952. *Minneapolis* Hot Watts—P(R/C)—Ralph Costlow (corres. sec.), 1709 Lagoon Ave.; 15; 1952. *St. Paul* Flying Fools—P—Loren Turpin, 399 W. Wheelock Pky. *St. Paul* Polar Buzz Bugs—P—Lee Gray (advisor), 2300 Gall Ave., East; VI 7-1533; 52; 1949.

**Missouri:** *Brentwood* Guided Missiles—P&B(R/C)—Don White (corres. sec.), 8934 Bridgeport Ave.; WO 2-3187; 15; 1954. *Kansas City* Flying Fools—P—Peter Asjes (director), 5313 Ralston; RF 7785; 35; 1949. *Kirkwood* Thermaleers—P—Parnell Schoenky (pres.), 125 E. Maple Ave.; TA 2-0293; 13; 1938. *Lebanon* Sky Raiders—P&B—Robert Barbour (pres.), 686 Mill Creek Rd.; Tel. 1074; 8; 1954. *Pleasant Hill* Flying Ridge Runners—P—Leo Hitt (sec.), 406 N. Armstrong; Tel. 468; 16; 1949. *St. Joseph* Vultures—P—Floyd Pollock (pres.), 1013 Frederick; Tel. 2-5341; 15; 1948. *St. Louis* MPBC—B—Pete Yanczer (commodore), 2017A Chippewa (IMPBA). *Greater St. Louis* Modelers—P—Gene Winn, 8027 Wynwood Dr., Affton 23; FL 2-3871.


Be courteous to officials, fellow contestants, spectators. Keep smiling.


Be sure and express your appreciation to both the director and sponsor.




Accept your prize in good spirits; if you didn't win be a cheerful loser.

# DIRECTORY OF MODEL CLUBS

**Montana:** *Bozeman* Gallitin Valley Prop Spinners—P—Raymond Jordan (sec.), 407 N. Church; Tel. 1068-M; 20; 1952. *Glendive* Buzz Club—P—Jerry Gilbertson, 213 S. Taylor Ave. (AMA). *Helena* Flying Glue Pots—P—c/o Toy & Hobby Shop, 54 N. Main (AMA). *Hinsdale* High Flyers—P&B—Darrel Christensen, Box 151; Tel. 2481; 11; 1953. *Livingston* Aerobats—P—Gordon Evans (sec.), 332 S. "H"; Tel. 566-R; 17; 1952. *Red Lodge* Airscrews—P—C. J. Erck, 617 S. McGillen Ave., Box 214; Tel. 465J; 12; 1937.

**Nebraska:** *Lincoln* Aero-Design FC—P&B—Raymond Klone (treas.), 1212 S. 10th; Tel. 2-5658; 39; 1950. *Scottsbluff* Peanut Pilots—P—C. H. Adkins, 2418 Ave. E (AMA).

**New Hampshire:** *Concord* Capitol City Prop Busters—P—Albert Schinella (pres.), 9 Union; CA 4-0220; 15; 1952.

**New Jersey:** *Atlantic City* Sky Blazers—P—J. R. Manning, 123 W. Brighton Ave., Pleasantville (AMA). *Camden* Highway Glo-Bugs—P—Richard Skidmore (sec.), 1481 Kenwood Ave. (AMA). *Clifton* North Jersey R/C Club—P(R/C)—Leo Cunniff, 90 Day, Apt. G-18 (AMA). *Dunellen* Le-Rec Flyers—P—Robert Cornwell (pres.), 19 Kafka Dr.; DU 2-6019; 40; 1953. *Elizabeth* Glow-bugs—P—James Hennings, 902 E. Grand; 5; 1954. *Fairlawn* Jersey MC—P—S. Gilbert Evans, 600 Beech Ave. (AMA). *Hackettstown* Musconetcong Aeronuts—P—Louis Schierbaum, Willow Grove (AMA). *Hillside* Aero Nuts—P—Roscoe Mullican, Jr. (advisor), 1303 Liberty Ave.; WA 3-3895; 17; 1946. *Jersey City* North Jersey MRCC—C—Bill Rott, Jr., 2405 Hudson Blvd. (AMRCA). *Linden* MAC—P—Silveo Colletti (advisor), c/o Recreation Comm., Old City Hall, S. Wood Ave.; LI 3-0300; 18; 1953. *Morris Hills* High School MAC—P&B&C—Richard England (sec.), 4 Ridgewood Parkway West, Denville; RO 9-3051; 15; 1953. *Newark* Ivy Hill Flyers—P—Robert Jenefsky (sec.), 25 Manor Drive, Apt. 6H. *Parsippany* Flyateers—P—c/o Rich's Hobbytowne, U.S. Route 46; BO 8-2666; 40; 1954. *Perth Amboy* MAC—P—Martin Maciag, Box 133-A, Rt. 1, Matawan (AMA). *Tenafly* Balsa Bugs—P—Mike Fleury (v.p.), 11 Oak Ave.; EN 4-1195; 5; 1954. *Trenton* MAC—P&B&C—Leo Fox (sec.), 78 California Ave.; JU 7-5568; 15; 1936. *Union* MAC—P—Clifford Propst, 10 Lowell Ave., Summit (AMA). *Weehawken* Aero Zombies—P—Jack Fischer (treas.), 20 48-St.; UN 4-6939; 15; 1952.

**New York City:** *Bronx 51* Aeroliners—P—Martin Skoultchi (sec.), 811 Walton Ave.; MO 9-0876; 12; 1946. *Bronx 63* Mad Model Makers—P&B—Philip Mortensen (v.p.), 3961 Orloff Ave.; KI 3-7779; 20; 1953. *Bronx 65* Model Knights—P&B—Art Hasselbach (pres.), 3087 3rd Ave.; ME 5-2727. *Brooklyn 36* N. Y. Aeronuts—P—Richard Tygar, 8706 Ave. A (AMA). *Brooklyn 20* Blue Angels—P—Albert Pedersen (sec.), 238 51st (AMA). *Elmhurst, L. I.* Prop Spinners—P—William Fletcher, 86-36 55th Ave. (AMA). *Jamaica Island* Aero Knights—P—Skip's Island Hobby Shop, 17707 Union Turnpike; JA 6-7562. *Long Island City* Triboro MRCC—C—Salvatore Lollo, 41-20 49th St., Sunnyside (AMRCA). *Rockaway Beach* Rudder Nuts—P—Bradley Strahan (sec.), 431B 122 St.; 14; 1953. *Staten Island* Richmond FMC—P—Robert Goldwyn (sec.), 75 Decker Ave. (AMA).

**New York State:** *Buffalo* Miniature Aircraft Engineers—P—Howard Thomas (pres.), 47 Stenzil; LU 3893; 24. *Elmira* Flyoneers—P—Lou Young (pres.), 714 W. 1st; Tel. 2-1321; 5; 1949. *Elmira* Flying Sparks—P(R/C)—Harry Hartson (sec.), West Hill Rd., R.D. #1; EL 3-4224; 21; 1954. *Farmingdale* Republic Aviation Model Society—P—Arthur Wardell (pres.), 2 Hunt Pl., Bethpage (AMA). For Republic employees. *Hicksville* Nassau County Buzzards—P—Spero Kapelas (sec.), 20 Cable Lane; HI 3-5223; 17; 1953. *Merrick* Circle Burners—P—David Kingman (sec.), 102 Marion Ave.; FR 9-1893; 11; 1953. *Oriskany* Hell Razors—P&C—Charles Nelson (pres.), 123 Oklahoma Ave.; Tel. 6-1872; 10; 1945. *Rome Romac's*—P—Eskil Ringdahl, 1700 Blackriver Blvd.; Tel. 5463; 35; 1952. *Syracuse* MAC—P—Harry Copeland (director), 101 Lincoln Ave.; Tel. bus. 2-4181, home 75-6420; 1933. *Syracuse* Sky Knights—P—William Kenyon (pres.), RFD #2, Manlius; 74; 1951. *Watertown* Aeromodeleers—P—Dominic Folino, 562 Eastern Blvd. (AMA). *Westbury* Modeleers—P—Scott Lewis, 85 E. Cypress La. *Westbury* Salisbury MYC—B—Ed Grauer, 51 Earl; WE 7-5630; 33; 1952. *Westhampton Beach* Flying Legion—P—W. J. Burding (pres.); WE 4-2334; 20; 1953. *Yonkers* Glo-Devils—P—Earl Symonds (pres.), 100 Highland Ave.; YO 5-3970; 20; 1953.

**North Carolina:** *Carthage* Tree Top Terrors—P&B—W. F. Boing, Box 404; Tel. 4967; 11; 1951. *Greensboro* Prop-Twisters—P&B—W. H. Bunting (advisor), 311 S. Elam Ave.; Tel. home, 2-3905, office, 2-0912; 27; 1936. *Raleigh* MC—P—Jack Hinton, 2116 Wake Forest Rd. (AMA). *Roanoke Rapids* Rebels—P—Keith Dobbins, 824 Monroe; Tel. 4216; 9; 1954. *Salisbury* Aeronauts—P—Ralph Corelle, 834 Fairmont Ave.; Tel. 4071-XJ; 22; 1945. *Wilmington* MAC—P—W. M. Peck, Jr., 2409½ Country Club Pines (AMA). *Winston-Salem* Skywriters—P—E. D. Aldridge, 853 Watson Ave.; Tel. 3-7679; 35; 1938.

**Ohio:** *Akron* MRCC—C—Guy Richards, 3353 Magadare Rd., Magadare (AMRCA). *Celina* Flying Hornets—P&B&C—Gene Klosterman (advisor), Rural Route; Tel. 5-2351; 26; 1952. *Chillicothe* Fly Guys—P—Gene Osborne, Rt. 8; Tel. 3-0495; 6; 1949. *Cincinnati* Aeromodelers—P—G. A. Vogeler (sec.), 2873 Carroll Dr.; HU 5931; 37; 1951. *Cincinnati* Cincy Controlliners—P—John Kaeser, 6897 Kenwood Rd.; TW 3964; 52; 1948. *Cleveland* Lake Erie GMC—P—J. W. Grega (director), 355 Grand Blvd., Bedford; BE 2-5790; 30; 1947. *Cleveland* MRCC—C—Bib Seigmire, 6703 Pelham Dr., Parma (AMRCA). *Cleveland* American Airlines GMC—P—Harry McCall, 2056 W. 91st (AMA). *Cleveland* Reyburn Rocketeers—P—Bill Strack (pres.), 2112 Reyburn Rd., East Cleveland; IV 1-3390; 8; 1951. *Columbus* MRCC—C—Wilbur Mercer, 688 Ann (AMRCA). *Columbus* Model Flyers—P—William Folk, 2297 Hamilton Rd. (AMA). *Columbus* North American Aeromodelers—P—J. R. Caldwell (program chmn.), 2758 Bellwood Ave.; EV 1349; 25; 1952. Must be N.A.A. employees. *Dayton* Buzzin' Buzzards—P—H. L. Roes, Jr. (sec.), 3306 Harvard Blvd.; TA 4468; 40; 1946. *Euclid* U-Liners—P—Darrell Bregar (sec.), 21130 Arbor Ave. IV 1-3917; 4; 1951. *Fairborn* Squadron #6—P—Jim Bartlett (treas.), 262 Eastview Dr.; Tel. 8-6344; 10; 1947. *Findlay* MAC—P—R. E. Rensch, 1121 Broad Ave.; Tel. 658; 12; 1953. *Hamilton* MAC—P—R. H. Hacker (sec.), 417 Progress Ave.; Tel. 3-7760; 15; 1953. *Hamilton* Thunder Birds—P—C. Millice (advisor), 238 Main; Tel. 3-8062; 25; 1954. *Lancaster* Skylarks—P—C. M. Clark (sec.), 721 Spring (AMA). *Lima* Kopy Kats—P—Edwin Pittington (sec.), 506 W. Vine; Tel. 3-1776; 9; 1953. *Lima* Line Tamers—P—J. W. Botkin (advisor), 417 S. McDinel; Tel. 9-6793; 15; 1945. *Medina* Glo Bugs—P—Alex Morton, Jr., Box 29 (AMA). *Portsmouth* Thermaliers—P—1236 Gallia (AMA). *Shelby* Balsa Buzzards—P—H. L. Robinson (director), Shelby Pure Milk Co.; Tel. 2-2251; 12; 1944. *Springfield* Strato-Hawks—P—F. R. Kenchel (sec.), 151 S. Tecumseh Rd.; Tel. 6-6838; 20; 1945. *Toledo* MRCC—C—Carl Noward, 1384 Berdan Ave. (AMRCA). *Toronto* Thunderbugs—P—Madge Blakely (sec.), 709 Market; LE 7-3633; 33; 1954. *Wickliffe* Flying Tigers—P&B—T. D. Raney, Jr. (sec.), 1815 Harding Dr.; WI 3-1935; 8; 1953. *Youngstown* Northeastern Ohio Model Engineers—P—J. J. Bunn (v.p.), 2010 Rosedale Ave.; ST 8-5233; 15; 1951.

**Oklahoma:** *Ada* Prop Spinners—P—R. E. Descans (corr. sec.), 528 E. Main; Tel. 489 or 1734; 20; 1946. *El Reno* Rudder Bugs—P—Vernon Brandley, Rt. #1; 42; 1954. *Lawton* RingMasters—P—Bob Mogg (pres.), 1212 Ferris; Tel. 1938W; 18; 1953. *Tulsa* Glue Dobbers—P—Joe Kehr (sec.), 6245 E. Marshall (AMA).

**Oregon:** *Coquille* Glo-Devils—P—E. R. Butler (sec.), Rt. 1; 8; 1952. *Corvallis* Comets—P—A. J. Culver, Jr., 1289 E. Grant; PL 3-5120; 32; 1945. *Irrigon* MC—P—Bud Phaneuf, Box 43; UM 697; 12; 1951. *Portland* Multnomah Doodlebugs—P&B—R. E. Nichol (pres.), 3915 S. W. Dakota; CH 1707; 10; 1947. *Salem* Capital Sky Cats—P—Don Santee, 1873 Court St.; Tel. 4-5530; 15; 1952. *Salem* MAC—P&C—E. J. Roth (director), 2080 Market; Tel. 3-6502; 15; 1938.

**Pennsylvania:** *Allentown* GMA—P—George Stahl, Jr., 1111 Hamilton (AMA). *Bethlehem* Lehigh Valley MRCC—C—R. J. More, 66 W. Elizabeth (AMRCA). *Bristol* Aeromodeleers—P&B—A. E. Abrams, Jr. (sec.), 1031 Pond; BR 8-2579; 34. 1946. *Brogueville* Sky Clippers—P—M. V. Pickel, RD #1; Tel. 7R1; 9; 1952. *Chester* Prop Busters—P—James Tofsted, 1411 Honan, Highland Gardens (AMA). *Collegeville* Cross Keys Hawks—P—Jean Richards, Box 62 (AMA). *Easton* Model Airplane Doctors—P—R. R. Sottosanti (treas.), 1113 Keane; Tel. 2-0394; 65; 1950. *Gettysburg* MAC—P—Gilbert's Hobby Shop, 230 Steinwehr Ave. (AMA). *Johnstown* MAC—P—Sam Gossard, 718 Summit Ave. (AMA). *Lehighton* Prop Spinners—P—H. E. Roth (sec.), 118 S. 4th; Tel #3; 35; 1953. *Levittown* Aerobugs—P&B—Johnny Garlich, 47 Grove Lane; WI 6-7562. *McClellandtown* German Township Aeronautics Club—P—Andrew Mickey, German Township High School; Tel. 6325; 40; 1950. *McKeesport* Keystone Clippers—P—A. C. Kushner (pres.), 707 Hazel; OR 3-0167; 78; 1946. *Morrisville* Trenton MPBC—B—James Onofori (commodore), 78 Harrison Ave. (IMPBA). *Nescopeck* Berwick MC—P—Dale Andreas, Jr., 531 Broad (AMA). *Philadelphia* Supersonics—P&B—Lawrence Hub-

## REGIONAL MODEL GROUPS

- Bucks County, Pa., Federation of Model Airplane Clubs—Tom Lenox, Secretary, 145 Hendrickson St., Morrisville, Pa. Membership open only to clubs.
- Oregon Aeromodelers—Ken Thorstad, President, 6344 N.E. 8th Ave., Portland 11, Oregon. Includes all model airplane clubs in Oregon.
- New England Wakefield Group—Lee Renaud, 1159 Washington St., Canton, Mass. Membership includes expert rubber-powered modelplane flyers.

bert (pres.), 646 Robbins Ave.; FI 2-2749; 8; 1954. *Philadelphia* MPBC—B—Walter MacWilliams (commodore), 106 Fitzgerald (IMPBA). *Philadelphia* Barnstormers—P&B—Cleo Nyohe, Jr., 873 Sanger; DE 6-6953; 6; 1953. *Philadelphia* MAA—P—V. R. Fritz, 1625 Spruce (AMA). *Philadelphia* Sports Car Modelers—C. John Biddle (pres.), 3405 N. Weikel; 9; 1954. *Pittsburgh* Aeromodelers—P—Colin Marks (sec.), 910 Bernd; HU 1-1869; 18; 1952. *Pottsville* Piston Pushers—P—J. W. Zimmerman (sec.), 516 Greenwood Ave.; Tel. 494-M; 25; 1951. *Mt. Wolf* Skymasters—P—C. M. Ehrhart (director), 21 S. 5th; 15. *Springfield* Golden Eagles—P—Robert McCleary, 121 Barbara Dr. (AMA). *E. Stroudsburg* Pocono Aeros—P—W. F. Shelley (sec.), 98 E. Brown (AMA). *Turtle Creek* Monroeville MFC—P—Emerson Miles (sec.), 1811 Miller Ave. (AMA).

**Rhode Island:** *Woonsocket* Flying Fools—P—T. W. Wenclawik (treas.), 5 John; Tel. 7766J; 10; 1949.

**South Carolina:** *Charleston* Prop Busters—P—D. G. Kinne (pres.), 103 Wentworth; Tel. 5140; 36; 1947.

**Tennessee:** *Chattanooga* Flying Moccasins—P—H. L. Donaldson (pres.), 3609 Lamar Ave. (AMA). *Johnson City* Model Maniacs—P—Bob Hodges, 1603 Sevier (AMA).

**Texas:** *Abilene* Key City MC—P—A. J. Thompson, 2642 S. 7th (AMA). *Amarillo* MAC—P—Mrs. Mildred Plant (sec.), 211 E. 7th Ave. (AMA). *Arlington* MAC—P—Dick Atkins (pres.), 1701 Grace; AR 4-5424; 20; 1954. *Austin* Enfield Aero Nuts—P-C—Marshall Wilson (pres.), 1610 Watch Hill Rd.; Tel. 7-4660. *Beaumont* Sabine Area MC—P—E. D. Patterson (pres.), 2170 Pecos; Tel. 4-5231; 40; 1947. *Dallas* Cloud Cutters—P—Don Moreau (sec.), 2021 S. Beckley; 50; 1953. *Dallas* Hobby Hounds—P—Leland Morton (sec.), 9218 Briggs; EV 3298; 38; 1950. *Fredericksburg* VFW MAC—P—H. J. Itri, 302 W. Main (AMA). *Mesquite* Hobby Hounds—P—Harvey Grogan (v.p.), Rt. 3, Box 596; Dallas; Tel. EX 5071; 38; 1952. *San Antonio* Jeff Aces—P—J. R. Brown, 1032 Donaldson; CA 2-0142; 29; 1953. *Sundown* Flying Eagles—P—Johnny Claypool (pres.), Box 421; Tel 2393; 70; 1953. *Wichita Falls* Tail Twisters—P—Vernon Hammersley (v.p.), 1632 Pearl; Tel. 2-3920; 21; 1954.

**Utah:** *Salt Lake City* Active Modelers—P—J. P. Yardley, 2836 S. 15th East; 30; 1951. *Salt Lake City* Ute Aeromodelers—P—B. J. Taft (pres.), 2600 E. Commonwealth Ave.; Tel. 8-2407; 25; 1952. *Salt Lake City* Fly Guys—P—Carl Rasmussen (v.p.), 1044 Windsor; Tel. 2-2839; 12; 1952.

**Virginia:** *Hampton* BrainBusters—P—Joseph Boyle (pres.), 219 Shenandoah Rd.; Tel. 3-3400; 12; 1942. *Harrisonburg* Model Builders Club—P&C—E. L. Hayden (pres.), 42 W. Bruce; Tel. 4-7271; 132; 1954. *Portsmouth* Control-Liners—P—R. C. Dawson (pres.), 101 Cypress Rd.; Tel. 2-7634; 50; 1953.

**Washington:** *Bellingham* Flying Bee's—P&B&C—D. E. Hodges (sec.), 2208 "A"; Tel. 2523-J; 21; 1948. *Bremerton* Prop-Spinners—P—Douglas Beagley (sec.), 116B Oak; Tel. 3-3422; 15; 1941. *Ephrata* Piston Poppers—P&B&C—Andy Beaudry (v.p.), 535 "B" St., N.W.; Tel. 4-2372; 16; 1952. *Everett* Model Air Force—P—E. J. Sigmon (director), 2605 Colby Ave.; CE 1216; 15; 1950. *Mercer Island* Bellevue Balsa Butchers—P—E. D. Johnson, 3205 Shorewood Dr. (AMA). *Mount Vernon* MC—P&B—Bud Peck, Dependable Motor Co.; ED 6-2751; 11; 1948. *Seattle* Flying Six—P&B&C—Wayne McVey, 7321 40th St., N.E.; FI 2824; 6; 1954. *Seattle* Skyhawks—P—Chuck Wood (pres.), 3815 51st St., S.W.; HO 4584; 34; 1950. *Seattle* Flying Sportsmen—P—Everett Carty (pres.), 4154 48th Ave., S.W. (AMA). *Spokane* Northwest MAC—P—H. S. Perry (sponsor), S. 107 Wall; MA 4533; 35; 1949. *Tacoma* Aeromudlers—P—Edwin Heacox (corres. sec.), 1009 N. Yakima; BR 6877; 30; 1950. *Tacoma* Finger Whackers—P—Eddie Knudson (sec.), 622 N. Kay; BR 6730; 33; 1951. *Tacoma* McChord Model Maniacs—P—Base Hobby Shop, McChord AFB (AMA). *Tacoma* Model Mashers—P—Alan Brooks (sec.), 4018 S. "D"; HI 5844; 78; 1953. *Vancouver* Glo-Bugs—P—D. L. Nelson (corres. sec.), 1213G East 48th; 22; 1951. *Walla Walla* Gas Bugs—P—Jack Eagan (pres.), 1510 E. Isaacs; Tel. 3435; 20; 1938.

**West Virginia:** *Weirton* Prop Twitchers—P&B—H. A. Gabler, Jr., 814 5th; Tel. 2855-W; 44; 1953.

**Wisconsin:** *Beloit* Hangar #13 M.C.—P—J. H. Bort (sec.), 1639 Sherman Ave.; EM 2-5133; 12, 1953—special section for radio control members called "Thermal Dusters." *Burlington* Flyin' Liars—P—J. J. Pihringer (pres.), 664 James; Tel 926W; 27; 1947. *Fond du Lac* Glo Bugs—P—Roy Tindall (sec.), 322 Boyd; Tel. 8355W; 31; 1954. *Manitowoc* Air Pirates—P—Dan Hoffman (sec.), 1009 N. 17th; Tel 7832; 20; 1951. *Milwaukee* Flying Electrons—P(RC)—Vic Weissbrodt (pres.), 2100 E. Webster Pl.; WO 2-6934; 45; 1950. *Milwaukee* Flying Gremlins—P—Frederick Bretsel (sec.), 4667 N. 42nd; HI 4-7149; 30. *Waukesha* Wingmen—P—David Carson, 1122 Buena Vista Ave. (AMA).

**Canada:** *Brockville, Ontario*, MAC—P—H. S. Lorimer (chm.), 112 King St., E; Tel. 6561; 20; 1936. *Kingston, Ontario*, MAC—P—L. Shales (chm.), 79 Arch; Tel 8427; 50; 1941. *Calgary, Alberta*, MAC—P—John Bortnak (corr. sec.), 1203 8th Ave. East; Tel 5-1119; 40; 1937. *Edmonton, Alberta*, Model Aeroneers—P—R. G. Moore (sec.) 10654 82nd Ave.; Bus. Tel. 3-5293; Res. Tel. 3-4309; 20, 1948. *Quebec City, Quebec*, Mini Aero Club—P—Rene Voyer (sec.), 748 5th; Tel. 4-2284; 45; 1950. *Toronto, Ontario*, Society of Model Engineers—B—R. E. L. Johnson (commodore), 228 The Kingsway (IMPBA). *Toronto, Ontario*, GasHoppers—P—Ed Flanagan (pres.), 31 Memorial Pk. Ave.; GL 9292; 35; 1942. *Weston, Ontario*, Canadian GMC—P—Mrs. W. R. Hockin; CH 1-1717; 67. *West Kildonan, Winnipeg, Manitoba*, Canadian Colibris MC—Lindsay Spence (sec.), 177 Rupertsland Ave.; Tel 59-2614; 12; 1954. *Windsor, Ontario*, MAC—P—Gary Lucier (sec.), 221 Lincoln Rd.; CL 4-3710; 30; 1925.

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# STATEN ISLAND FERRY

■ Without a doubt, the five-mile ferry route between the Battery on the Island of Manhattan and St. George on Staten Island (also part of the City of New York) is the most famous in the world. The Staten Island ferries have figured in novels, moving pictures, jokes and whatnot the world over.

Of the types in service the "Gold Star Mother" class is the most representative. This vessel and her two sister ships "Miss New York" and "Mary Murray" have plied across New York's Upper Bay since 1937. These are rather large vessels capable of carrying over thirty vehicles and three thousand passengers. The speed averages 15 miles per hour with a top speed of 18 miles per hour to make up for delays or especially heavy water traffic.

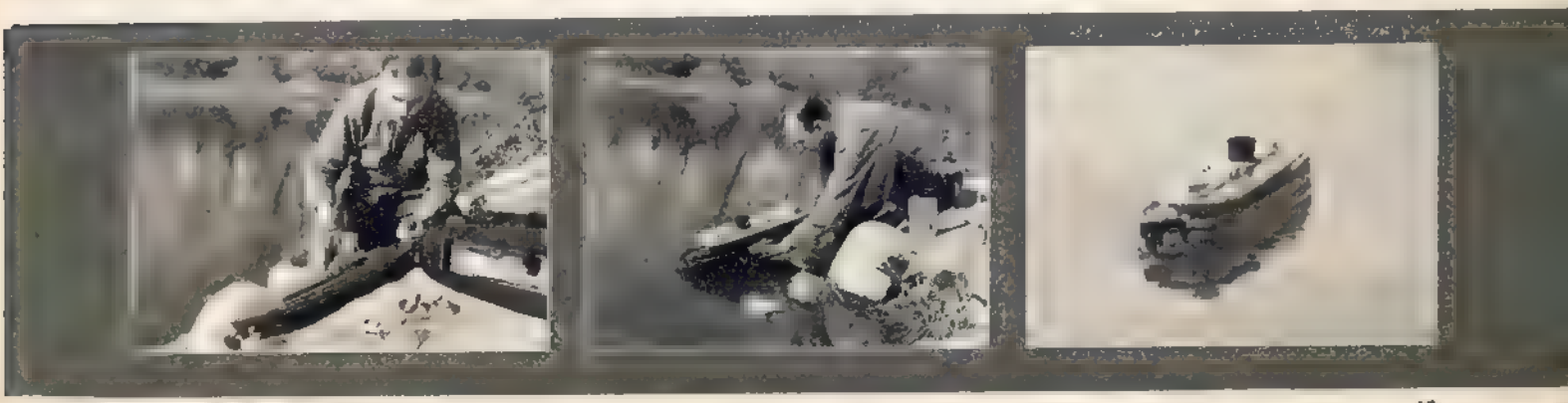
These ships have a service displacement of 1850 long tons and an overall length of 267 feet. Powerplant machinery consists of four water-tube, oil-fired boilers which supply 180 pounds per square inch steam pressure to a four-cylinder reciprocating steam engine developing 4200 horsepower. The vessels were designed by the New York City Department of Plants and Structures and built by United Shipyards, Inc. The New York City Department of Marine and Aviation now owns and operates this ferry route.

Our model of the "Gold Star Mother" is quite easy to construct. The superstructure is made of ⅛" and ¼" sheet balsa exclusively while the hull uses plywood keels and strength frames. The latter is planked with ⅛" x ¼" balsa strips. This is the equivalent effort of planking one-half of a model airplane fuselage.

The powerplant used on the prototype model follows the full-scale ferryboat in that it is a steam engine and boiler combination. Steam power is cleaner and quieter than glow plugs or diesels and does not require the constant battery replenishment of electric motor powerplants. There are several miniature steam engines and boilers. We used an oscillating single-cylinder engine and "pot" or "wick" type of boiler marketed by the Allyson Company. This produced a very realistic speed.

Trace the keels onto ⅛" plywood and cut to shape with a coping or jigsaw. It will be necessary to splice these here and there in order to conserve material. Eventually the two keels will be cemented to each other, side by side. This is done later. Mark off the position of the brass stern tubes onto the inner side of the keels. Carefully cut a groove into the keels to accommodate the two stern tubes. These must be in perfect alignment in order to prevent the shaft from binding. The plywood keels must also be grooved for the rudder post brass tube bearings. Cut these to length and fit into the grooves. Using plenty of cement sandwich the four brass tubes between the double keel. Hold the keels together with "C" clamps or apply heavy weights atop the assembly in order to force them together until dry.

While the keel is drying the frames



should be traced onto the prescribed material and cut to shape. Cement these to the keel using plenty of the adhesive. Now, trace the outline of the hull deck onto ¼" sheet balsa and cut to shape. Be certain to cut out the center portion of this deck as the plans illustrate. Attach this atop the frames at this time, cementing the deck to the keel as well as to the frames.

The hull is planked now with medium-hard ⅛" x ¼" balsa strips. Start by cementing a strip to each side of the protruding keel. These should be cemented to the frames as well. Hold in place with straight pins until dry. Next, add a strip to the side of the two strips previously installed, being certain to cement these to the frames and adjoining strip. Continue in this manner until the hull is covered. It will be necessary to taper and bevel the strips as planking progresses in order to provide a good fit. Do not worry about small hairlike cracks and spaces as these will be filled in with plastic balsa and balsa filler.

When the planking is complete it is advisable to recement as many joints as is possible, from the interior of the hull, in order to insure strength and watertightness. With this task complete all cracks and spaces in the hull covering should be filled, not merely covered, with plastic balsa. Force this compound into the spaces with the fingers and, when thoroughly dry, sandpaper well with 1/0 or fine sandpaper. Now recheck all cracks and refill those that require additional plastic balsa.

Cut ⅛" sheet balsa into ¾" strips and cement these along the opening in the Hull Deck. This serves a dual function. The coaming keeps the superstructure in line with the hull and also prevents water from entering the hull when riding in rough water.

Sand the model again and brush on four coats of balsa filler or other balsa grain-filling liquid. Set aside to dry thoroughly.

Cut the three superstructure decks to shape. It will be necessary to cement standard width balsa sheets together in order to produce the required deck width. When this is done be sure to cut out the center of the decks as shown. Do not dispose of this piece as it can be used to construct the wheel houses and other deck protrusions later. The decks should be sanded smooth and it should be noted that the shade deck upper surface curves considerably, as the midship section reveals.

When smooth and correctly shaped the decks should have the location of the vertical ⅛" sheet superstructure sides marked on them with a soft pencil (eyebrow pencil or ball-point pen) so as not to score the wood. Notice that the grain direction of the superstructure sides runs vertically for added strength and in order to facilitate bending.

Cut the sections from soft sheet balsa and butt-cement these to each other until a sufficient length is obtained. Begin with the sides between the main and upper decks. Cement the side pieces onto the main deck, holding them in place with straight pins. It is not necessary to wait for the cement to dry before adding the Upper Deck atop the ⅛" sheet side. Make certain that the sides are flush with the Upper Deck. When this is dry the sides between the Upper and Shade Decks are now installed. Note that these form a continuous band. Preform the sharply curved portion of the side before it is cemented to the Upper Deck. It may be necessary to moisten a portion of the ⅛" sheet in order to facilitate bending it around the ends. Cement the sides to the Upper Deck and follow this with the Shade Deck.

When the cement is thoroughly dry sand the structure lightly and brush on three coats of balsa filler. Sand thoroughly, when dry, with 3/0 or very fine sandpaper. Cut the wheel houses and other deck houses to shape from ¼" sheet. Note that the wheel houses are laminated. Add balsa filler and cement the houses in place atop the shade deck.

It is advisable to "fill in" the hull and superstructure at the same time, alternating from one to the other in order to save time. It is an absolute necessity to seal the hull very completely in order to make it perfectly watertight. The smallest crevice will admit water which eventually swells, warps and bends the balsa skin and causes the paint and plastic balsa caulking to separate from the wood. It is not a difficult task to seal the balsa pores. The added weight is not an objectionable factor in model boats.

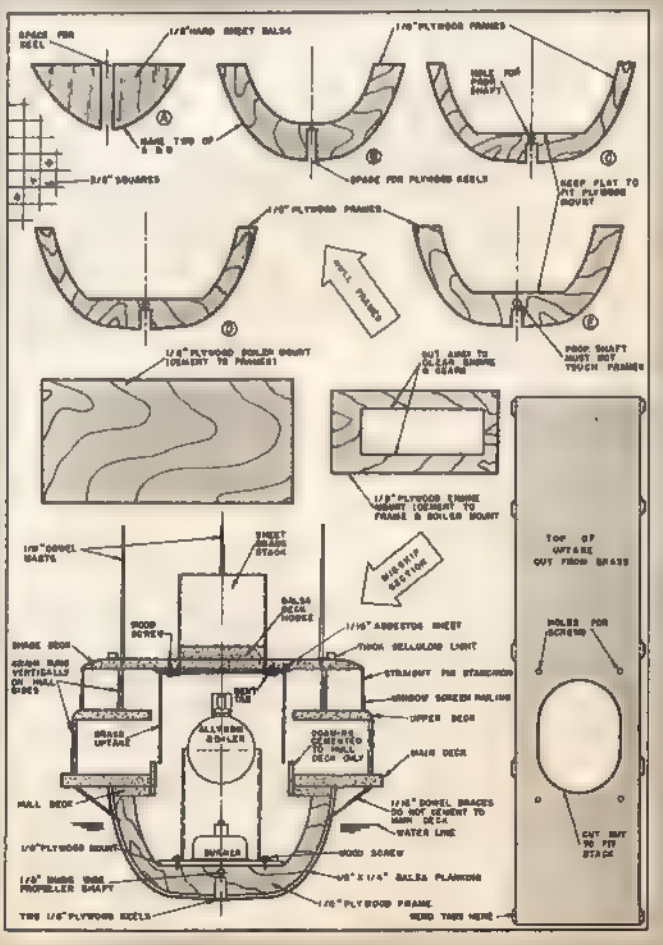
After the three coats of balsa filler or equal have been thoroughly sandpapered, two more coats should be liberally brushed on all surfaces. Sand these well. Thin the filler coat about ten percent and brush on two more coats. After these are sanded the filler coat should be thinned an additional five percent, or until it can be flowed on the model effortlessly and dries very smooth. Applications can continue until the desired degree of smoothness is achieved. The last several coats should be sanded with 8/0 wet sandpaper.

The hull interior should be waterproofed with filler coat. Flow this onto the planking and bulkheads in order to protect the hull from water and fuel that may spill from the boiler as well as water that may enter the hull via the shaft stern tubes.

We used ordinary music wire for the shaft. Slip this shaft into the brass tubing, being sure to slip the gear onto the shaft as it passes through the hull. The prototype model used a set of 2 to 1 reduction gears by the Pittman Electric Motor Company. Attach the larger gear onto the propeller shaft. Solder the brass propellers to the ends of the shaft at this time. Our ferry was fitted with 1" Scientific three-bladed propellers.

Cut the rudders from sheet copper or brass. Bend the lower portion of the rudder tillers and solder the rudders to them. Slip the tiller through the brass tube and then bend the upper portion as shown. The rudder positioner is now cut from 1/32" sheet brass or aluminum. File this 1/32" sheet brass or aluminum smooth and bend as shown. Cement this to the Hull Deck. The holes in the positioner

Full-size plans for the S. I. Ferry are part of Group Plan #55 from Hobby Helpers, 770 Hunts Point Avenue, New York 59, N. Y. (50¢)



help the cement hold the metal in place.

Paint the model as described on the plans. It is imperative that the light colors be applied first, followed by those that are progressively darker. Use paper masking tape to create a sharp, straight separation between the colors. We used dope on our model. Apply at least three coats of color to the superstructure and five coats to the hull. Thin the last two coats about ten percent.

Drill small holes in the hull with a hand twist drill for the 1/16" dowel braces. Sharpen these braces, paint them red and force them into the hull with a drop of cement. These are not cemented to the Main Deck. Paint hull again.

When this is dry the windows can be added. These are made from "Flex-cote" which is a sheet of solid color decal. Trace the window and door outlines onto white or yellow "Flex-cote" and cut to shape with razor blade or scissors. Dip in water and slide off onto the model.

Clip off the heads of straight pins and fit them between the Shade and Upper Decks as shown. These should be about 3/16" longer than required. Force the point of the pin stanchion into the Upper Deck and then lift it up to pierce the Shade Deck as well. This will cause it to be suspended between the decks. The wire mesh railing on the Upper Deck is made from ordinary window screening. Cut this in strips and paint it on both sides before it is cemented to the stanchions.

The lifeboats can be carved from scrap balsa or purchased in cast metal or hardwood form from your dealer or Polk's. These are suspended from straight pin davits.

Add other miscellaneous details such as navigation lights, light staffs, masts, cast metal ladders, ship's name at this time.

The lettering shown on the sides is made of silver decal letters. The only manufacturer we know of that produces silver decals of this size is the Tatem Company, 118 Broadway, Hillsdale, N. J. This firm will sell three sets of silver alphabets for fifty cents, postpaid. These sets contain double amounts of A, E, O letters.

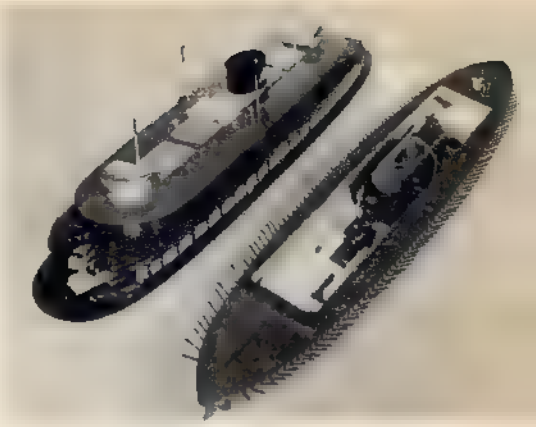
Apply clear Aero Gloss very lightly over all decals if Aero Gloss colored dope was used. If conventional dope was used clear fuel proofer can be applied.

The powerplant can now be installed. Both the steam engine and boiler are mounted on ⅛" plywood foundations with ⅜" round head wood screws. The foundations are cemented to the plywood frames very firmly. Waterproof the foundations before the powerplant is attached. The steam line from the boiler to the engine will require a bit of rebending. Be certain that all bends are gradual and without kinks. It is important that the oil reservoir be kept upright to facilitate filling. The brass gear, which is attached to the engine shaft, should be meshed perfectly with the nylon gear on the propeller shaft. The height of the engine can be governed by the addition of small brass shims between the engine and plywood mount.

*(Additional building details are available on the full-size plans.)*

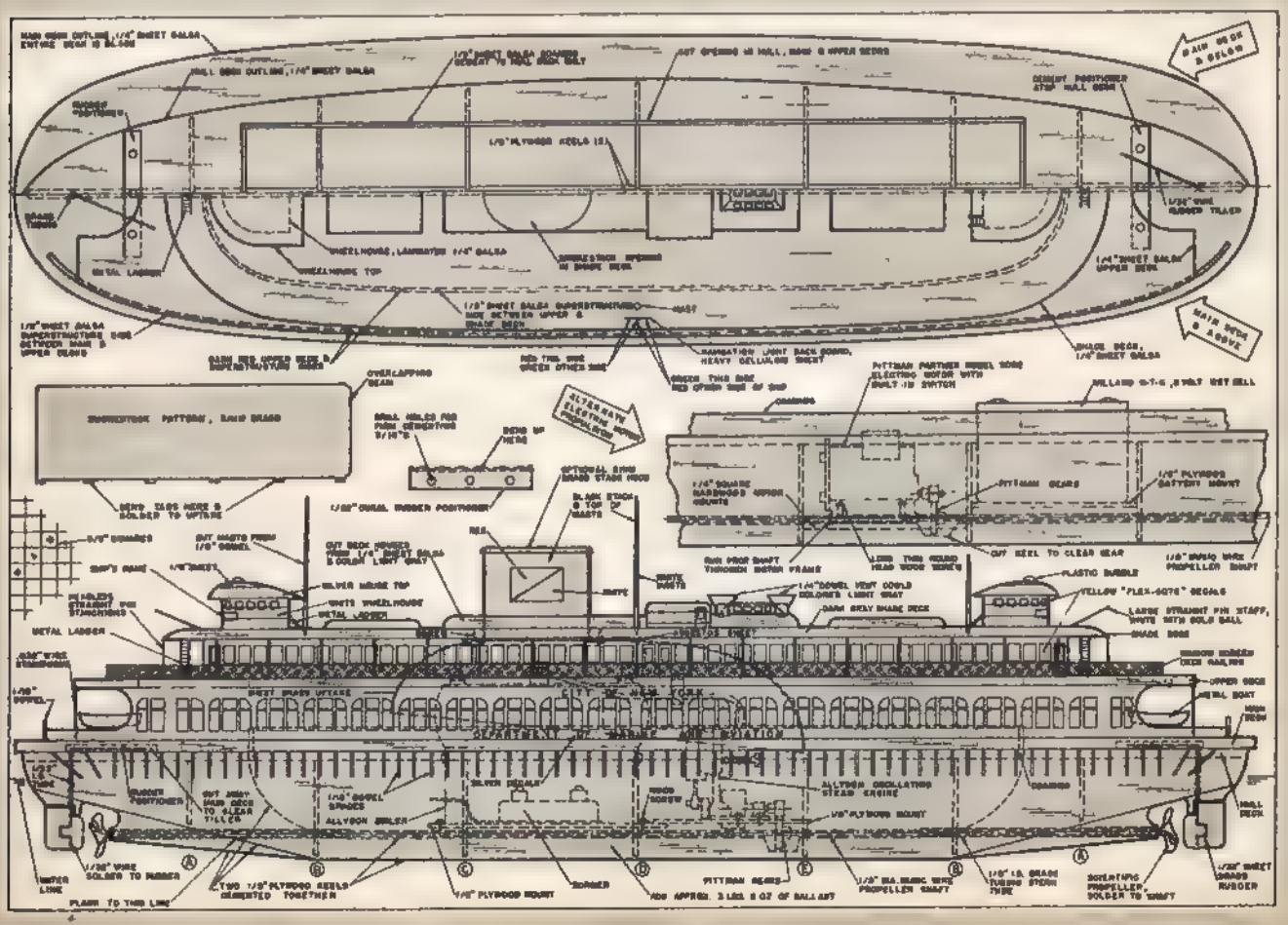
### List of Materials

5 pcs. ¼" x 3" x 36" hard balsa, decks, deck houses. 4 pcs. ⅛" x 3" x 36" med. balsa, superstructure sides, frames. 4 pcs. ⅛" x 6" x 12" plywood, keels, frames. 20 pcs. ⅛" x ¼" x 36" med. balsa, hull planking. 1 pc. ⅛" dia. x 25" music



wire, propeller shaft. 1 pc. 1/32" dia. x 18" music wire, tiller-rudder post stanchions. 2 pcs. ⅛" I.D. x 6" brass tubing, propeller shaft stern tube. 2 pcs. 1/32" I.D. x 1½" brass tubing, rudder post bearing. 24 1/16" dia. x 6" birch dowels, bumper post, hull braces. 1 pc. .004" x 12" x 12" sheet brass, smoke stack, uptake. 1 ⅛" dia. x 36" birch dowel, masts. 1 pc. 1/32" x 1½" x 1½" sheet brass, rudders. 4 1½" cast metal (Polk's) lifeboats. 2 1" brass (Scientific) propellers. 1 set two-to-one reduction brass & nylon (Pittman) reduction gears. 1 2" x 30" alum. or copper window screen, deck railing. 2 pcs. 1/32" x 1" x 3" dural or brass, rudder positioner.

*Miscellaneous.* Two tubes cement, solder, one pint "Balsa Filler Coat" or "Sanding Sealer", "Plastic Balsa", 4 oz. dark red, 4 oz. light red, 2 oz. white, 2 oz. light grey, 2 oz. dark grey, 2 oz. silver, 3/0, 1/0, 8/0 sandpaper, Flex-cote decals, pins.



# AMERICAN "NATS"

# Biggest Ever!

**Reported by Howard McEntee**

**Photographed by John W. Schneider**

■ The Nats have been growing bigger every year and 1954 was no exception. While we have no exact tally of the number of entrants, it was certainly around 1400 (some estimates were as high as 1800!). Whatever the actual number, the Navy put in a fantastic number of man-hours just getting things ready for the meet: it was figured that they spent 25,000 man-hours setting the stage, and that it would take another 50,000 to keep things on an even keel for the actual five days of the contest. As usual, the Navy offered meals at cost for contestants, and housed them on the base for practically nothing. Hundreds of double-decker beds were lined up in the Drill Hall, but we'll bet a good many of those who were supposed to sleep in them never wrinkled a sheet—some could even be found late at night asleep under their benches in the workshop hangar!

Day and night, the latter spot was the most interesting of the meet; always something doing, many fabulous ships that never did get finished for actual competition, dozens of gab-fests going on all over, greetings from old friends whom you see just once a year—at the Nats.

Something new was a necessity this year—the splitting of the meet into two sections during the first two days. Free flight events were held at the Chicagoland Airport, a private field about 12 miles north of Glenview. Transportation between the two areas was not a problem, since the Navy ran a bus service for those who had no cars. But the split-up was not viewed with much enthusiasm by the contestants, especially since Chicagoland was a lot smaller than the Glenview field and was surrounded by cornfields, woods etc. The Navy had a good retrieving service in operation, though, with helicopters, and lots of ground vehicles. Quite a few times we saw a modeler driven along under his wandering free flight, the model actually landing in his hands after it dethermalized.

It had orginally been intended to conduct *all* free flight events away from Glenview on Thursday and Friday; however, at least two events, Clipper Cargo and Radio Control, require fairly long and smooth take-off areas; since the Clippers are not expected to fly very far, and the R/C planes are under perfect control (?!), these two were conducted at one end of an unused runway at Glenview. R.O.G. runways of a temporary nature were set up at Chicagoland, for those events that required them.

Another "first" this year was the fact that the meet was cut a day short, with most of the events beginning on Thursday; Wednesday was registration day, the only official flying being in PAA Clipper Cargo and PAA-Load Class AB. It was also test flight day for those who wanted to travel to Chicagoland—and plenty did, though the afternoon rain slowed things considerably (even so, the PAA-Load craft continued to zip up-

wards every few moments). The Clipper boys back at Glenview were really hampered by the rain—it's tough enough to get one of those heavily laden ships off the deck in perfect weather—and as a result only four flyers succeeded in making official flights, though the very commendable number of 21 tried to do so. While not too many attempted this event, it was watched by large groups of modelers who, it is to be hoped, caught the bug and will try to get in on the fun.

Thursday saw things start off in earnest, with a beautiful day in prospect. Those entered in Indoor events took off for Chicago, and a full day was ahead for them, since these events were scheduled to run from 8 A.M. till 11 P.M. From the times racked up, it is apparent that the boys did not like the spot—an armory with a 75 ft. ceiling—as well as they did the huge hangar at Lakehurst last year. Best time in indoor stick rubber was about 21 minutes. From Thursday morning on, the Glenview base—and Chicagoland—were just a blur of activity. The boys who had entered several events had their hands full; even though they had their own cars, they had to travel between three different sites separated by 20 miles or so, which meant a lot of lost time. This made it all the tougher for those who aspired to win the National Champ trophies.

Friday turned out clear and hot, but by Saturday apparently the weatherman thought we had had it too good. Flying was scheduled to stop at 3 P.M. Saturday for the Blue Angels to put on their show, which meant that the model events had to start folding up at 2:30 or earlier. The air was cold and damp, and the ceiling very low. The expected huge crowd of spectators for the big plane show did not turn up, there being probably no more than 15,000 on the field. The scant ceiling kept the Angels from doing any of their high-altitude maneuvers. Many of the spectators got a real thrill from the low-level high speed runs of the Navy Cutlass plane, however; as the plane was coming in over the field on one run it appeared to everyone who could see it as though the wings were breaking off! Apparently the high moisture content of the air and the shock waves from near-sonic speed did the trick, but it was a sight a lot of us won't forget in some time!

Sunday was again clear, cool and a bit breezy, but nice modeling weather nevertheless; all hands agreed it was a shame to have to quit flying again at 2:30. This day the spectators really turned out in force, estimates placing the number of people on the field at 100,000 and even more. The Blue Angels and the Cutlass outdid themselves this time. Even to those who have seen the show many times before, it is always a new thrill to watch these jets in their beautifully smooth flying. This feeling was probably not shared by Joe Blow and his mates who were frantically trying to get in just one more contest flight!

The traditional Banquet was omitted this year; probably just as well, since it has seemingly been on the downgrade for some time. It was thus possible to start the awarding of trophies quite early, and combined with a streamlined award procedure, the ceremonies were over and everyone out of the auditorium by the unprecedented hour of 10:30! There was the usual dazzling array of cups, plaques, mugs, etc. Of course, the last ones to be awarded were those for the National Champs, and here we saw repeats and new names on the honor list.

A rundown of these champs might be interesting, since it will show aspiring winners what sort of modelers these Champs are, and what you have to do to come out first in such a huge meet as the Nats. Top man this year was Willard ("Woody") Blanchard Jr., of Hampton, Va., who was also Open Champ (he took the Open honors last year, too). An aerodynamicist for the N.A.C.A., Woody feels that his modeling activities have helped him greatly in working with the big planes, and conversely, that big plane theory can be applied—with common-sense application of Reynolds Number—to his model designing.

He favors outdoor H/L gliders, PAA rubber, the smaller PAA-Load categories (Half-A and Clipper), Limited rubber, and Half-A and A free flight. His wins at Glenview included a 1st (PAA rubber), a 2nd in Towline glider, a 3rd in Clipper Cargo, 5th's in Wakefield and Limited rubber, plus a couple of low places in AB PAA-Load and R.O.W. Woody started building in 1934 at age 10, and is a member of the BrainBusters Club. As a staunch supporter of the free flight categories, he feels there should be more kits for contest-type free flight models, and hopes sometime to try his hand in this field.

The Senior Champion, Bob Gelvin of Topeka, Kans., says he used to sit by the hour and watch big brother Dick build planes; by the time he reached seven, he was buying 25¢ kits at a rate of one a week; they were rarely finished, though, as he usually lost interest in the one under construction, and bought a new one.

When Dick returned home from war service, he opined that Bob had improved enough to try a model that would really fly, and Bob made his first model covered with Jap tissue (he had always used wrapping paper before!).

He entered his first contest in 1946, built his first gassie the next year. His first Nationals was in 1948, where he took firsts in A gas and H/L glider—and he hasn't missed a Nats since. Bob is another enthusiast for free flight models of all types, preferring Class A models (he has won Nats Jr. A once and Sr. A three times); he also favors PAA-Load and R.O.W. He has tried U-control, but didn't care much for it. Bob won his title this year (he was Junior Champ in 1948) with 1st in Class A gas, 4th in AB PAA-Load, 5th in Half-A F/F, and some low points in B gas. Bob builds about four models each summer, many of them of his own design. He is currently getting much interested in R/C—like Woody Blanchard—and has hopes of being a jet pilot, after finishing his course at the University of Kansas, where he is a Junior.

The Junior Champ, Joe White of Sacramento, Calif., turned the tables on his brother Bill this year. At Willow Grove in 1953 Joe was actually awarded the trophy, through a mistake in the listings, only to see it handed over to his brother. But in 1954 Joe was not to be denied again. As is the case with the Other National Champs this year, Joe does best in the free flight events; his wins included a 1st in Wakefield rubber, 2nd in B free flight gas, 3rds in Towline, A gas and Limited rubber, and 4ths in Indoor stick and Navy Carrier.

Doubtless everyone has heard of the Club Champs, the Oakland Cloud Dusters, since they have taken the title twice in the past. Rumors reached Oakland that the Detroit boys were out to retire the Team Trophy, since they too had won it twice previously. As a result, seven Dusters made the trip to Chicago—more than attended the Nats in 1952 when they were held a few hundred miles away at Los Alamitos! A modelplane Team consists of five members, of course, and those other two didn't go along to compete or just for the ride—they went to help the five Team members, Manny Andrade, Joe Bilgri, Hank Cole, Joe Foster and Carl Rambo. The unsung ground crewmen were Dick Burger and Walt McNeill.

As a Team, the boys had one good event, Indoor glider, taking 1st, 2nd, 4th and 6th. Individually they feel they had one of their poorest years; among them they gathered in one 1st, three 2nd, three 4th, and three 5th places. The Club favors the FAI International events (Wakefield, FAI power and Nordic glider) and Team members entered from 10 to 15 events per person, but missed out flying in quite a few of them due to lack of time.

The Cloud Dusters were formed as a Junior Birdmen Chapter about 1934, but none of the original members still belongs. There are now 24 members scattered over a large area, and meetings are held twice each month, with one meeting each month being an indoor club contest; here they go for such events as H/L glider, ornithopters, R.O.G. balloon busting and paper-covered stick models. Two members of this year's Nats Team—Manuel Andrade and Joe Bilgri—have been on all three Championship teams.

Summing up the Nats, we find most modelers agreed that the Navy and the AMA staff from Meet Director Leon Shulman on down did a fine job in general, with particular thanks to the many timers. Glenview N.A.S. is a beautiful spot (it used to be the site of a country club and part of the golf course is still maintained on the Station), but because it is on 24-hour alert free flight events had to be held at another field for two days.

As one model flyer pointed out, the Navy has plenty of fields that *can* be closed down completely for a full-length Nats—so why not choose one of these? Most of the problems that arose were the result of the shortened meet period and the multi-flying sites. Plus the inevitable periods of bad weather and the fact that flying on two days was cut short by the Air Show. All hands ask that we have a *full-length* meet in 1955!

# AMERICAN "NATS"

PAA Endurance try made by USAF's Lt. Richard Moorehead with modified Trixter Beam using K&B .29. Fuel line broke after 30:40.

Reappearance made by Bill MacKerracher, San Francisco, with his R/C speeder. Rockwood 5-reed rcvr, rudder-elevator servo control.

Clifton Betz lends helping hand with Jimmy Landry's K&B .19. Jimmy (lt.) of New Orleans took 4th in Cl. A speed with this original.

Dooling .29 original speed entry by Bill White (Sacramento, Calif.)—1953 National Champ —gets last-minute tuning by Bob Cherney.

52" span, 8.5 lb. Lockheed P-38 by Larry Simmons, Chicago. Two K&B .32's. Gear shock absorbing; cockpit is complete scale.

(Left) Lt. Jim Ripkin, Scott Air Force Base, Ill., launches his McCoy .29 powered, original design Class B free flight. Rudders on stab bottom only.

Carl Goldberg (below) of Zipper-Clipper-Superform fame, helps out in Pan Am's Clipper Cargo event. Rainy weather drove contestants under table.

Let's see, now, says Robert Host, Kokomo, Ind., there's a receiver in here someplace! This R/C has 7' span; Forster .99 rebuilt with front rotary and ball bearing shaft. Wheels have working brakes which operate off escapement. Tremendous amount of fine machine work is displayed on this craft.

USAF B-26 built from Jap kit by Airman 1/C Vincent Chimera, Johnsone AFB, Tokyo. Spans 4.5 feet, powered by 4 Enya .29 engines.

Mighty heave-ho hand-launch by Bob Groth of Cleveland in Class C speed flying event. This McCoy .60 original flown by Al Stagens.

Bob Lutker, USAF team member, displays fine Anderson Spitfire-powered Stearman —2nd, Carrier. Bob is World Speed Champ.

Indiana's Tony Grish with his neat modified Live Wire Cruiser powered by K&B .23. Radio receiver is Macnabb 465 megacycle.

Jet powered model Douglas Skystreak. Faygen Taverbaugh of Steger, Ill., used a Dyna-Jet engine to power this control line scaler.

Canadian Ken Ritchie of Winnipeg (left) assumes classic stance in Class A free flight competition. His model was modified Jasco Rival with E.D. 1.46 cc. engine. Below: Lawrence Conover's shrouded-prop Thermal Hopper powered Clipper Cargo. Need we say this was "original"? After getting off ground with 25 oz. load, model fell off on one wing from height of 10 feet. Al and Mary Simmons, Chicago (rt.) hold 15-lb., 78" span B-17; 4 K&B .32's. Ron Ribbens, with Dyna-Jet F9F-2 Panther.

# AMERICAN "NATS"

First place in senior stunt taken by C. Hill Hutchins, Jr., Spartanburg, S. C., with Fox .35 original. Tornado 10/6 prop. Slick finish.

Martin SC1 torpedo bomber of 1923 vintage entered by Illinois' David Shipton, O&R .29 ignition engine. Torpedo under fuselage.

Rise-off-water event's artificial pond was active spot. Here is Henry Cole, Jr., Palo Alto, Calif., launching original K&B .15 job.

This Custom Cavalier—much modified—changes every year. Owner, Frank Madl, Chi.; Rockwood 5-reed rcvr; R-M-E plus brake control.

From Navy's Treasure Island: Chief Electrical Tech. R. J. Beckman & semi-scale Cub, own 5-channel reed rcvr, R-M-E, 9 lbs., 7½'.

Washington, D. C., contestant Lt. Cmdr. J. D. Gregory takes off his Sterling Tri-Pacer in the control line flying scale contest.

This model was powered by an O.S. "29" and weighed 6½ pounds. Flying scale entries for '54 were the most varied in any Nationals.

Look of anguish covers Wayne Sutherland's face as he watches his helicopter get off on flight which brought him third-place award. Wayne's from Baltimore; his 'copter was powered by a Spitfire .049 engine. Note inevitable camera fan busily at work in background.

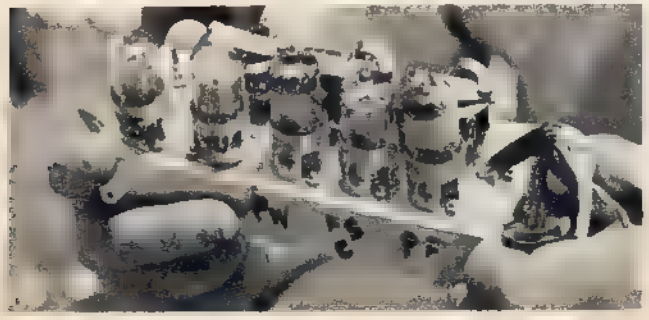
Super Buccaneer by George Swank, Buffalo. 5-channel Schmidt rig, rudder-elevator-motor (R-M-E) control. 10 lbs. Anderson Spitfire.


Modified Cessna L-19 built and flown by Jim Reed, Silver Spring, Md. Uses Good's 3-tube rcvr, Fox .35, rudder only. 6'; 5½ lbs.

Alfred St. Clair, "Mr. Neptune," of Williams AFB, Ariz., gets off to a second place in Clipper Cargo with K&B .19 payload model.

Jane Weaver of Wichita, Kan., holds husband Bill's Nordic towline glider entry. Photographer forgot to get any data on model—sorry.

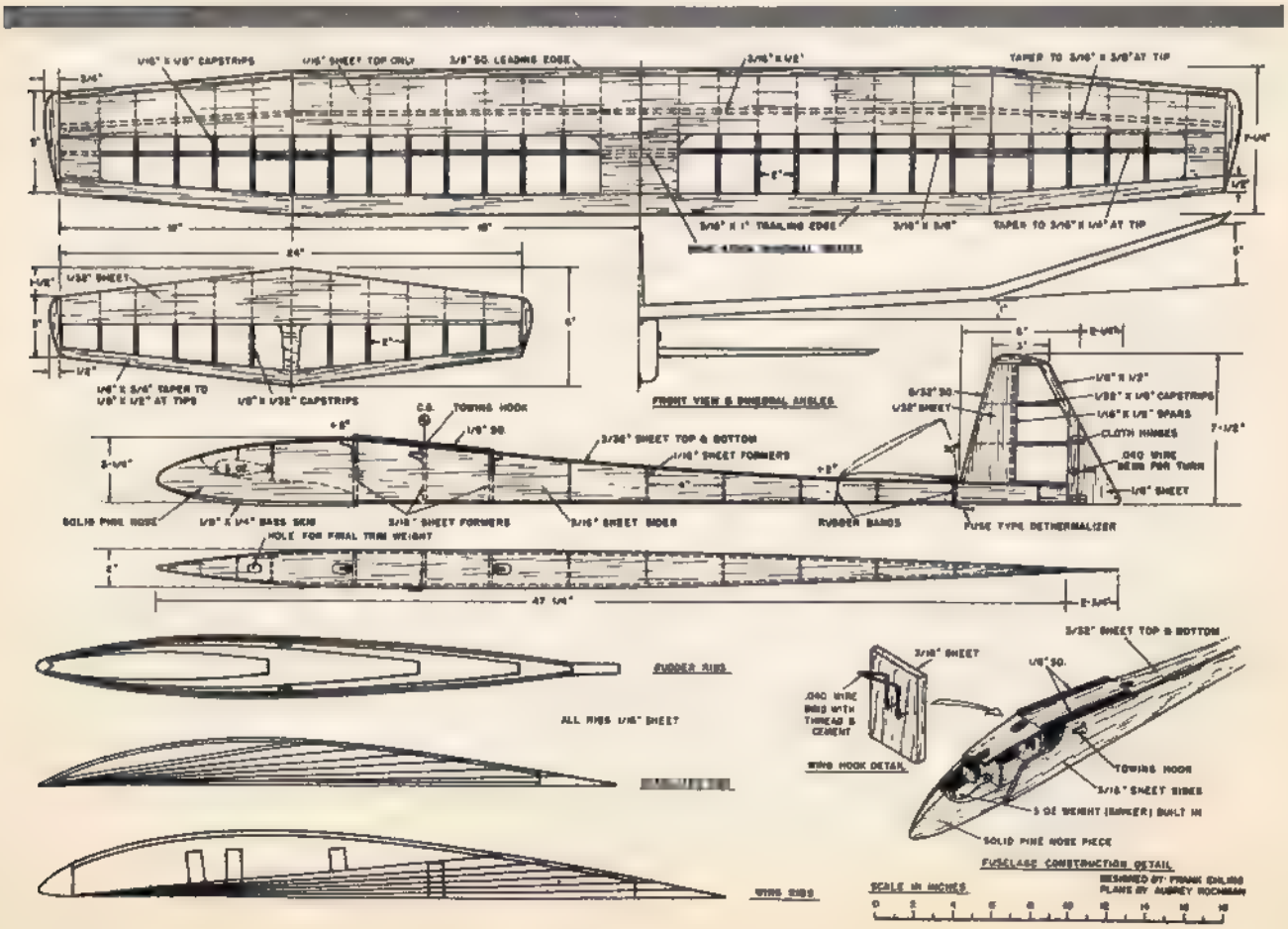
Getting bigger! Dr. Walter A. Good's new R/C receiver; it's 5-tube, 2-proportional channels set-up tied into 3 Kurman relays.



# Thermal Kid

**By FRANK EHLING**

■ Certainly the most majestic modelplane event is the towline glider competition where motorless craft are pulled aloft by towlines and released to seek and soar on thermal currents. In the annual international "A/2" towline glider competition for the Swedish Cup Yugoslavia has scored 2 victories, Austria, Denmark and Germany each one. *Half-size* plans for Mr. Ehling's appealing Nordic design are available from Hobby Helpers (770 Hunts Point Ave., New York 59, N. Y.—50¢) as part of Group Plan #558. Rib drawings here half-size will be full size on that plan.



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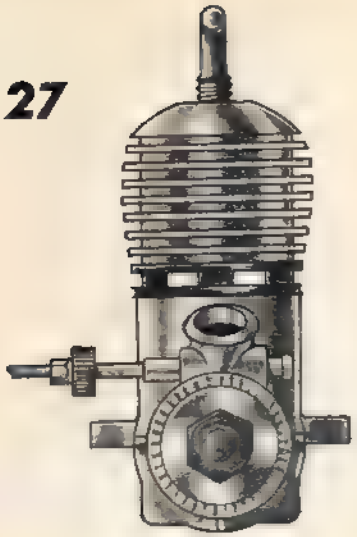
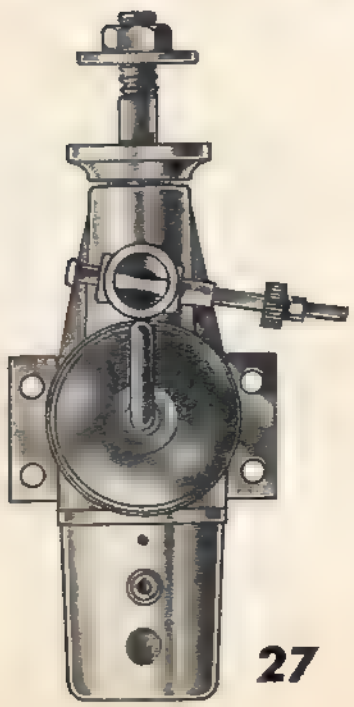


# ENGINE ROUNDUP

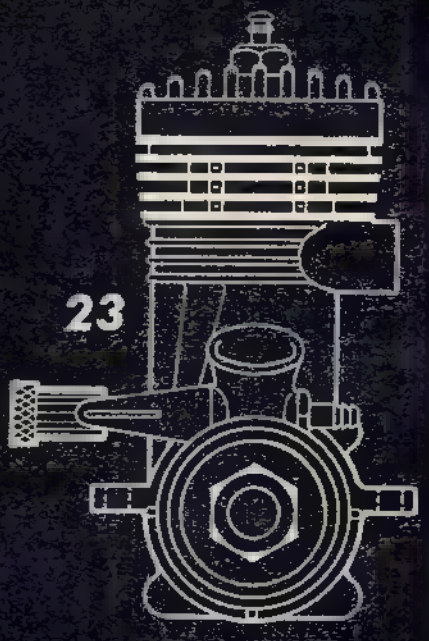
Here is one of the most informative collections to date of engine drawings and data. The information in the chart has been furnished to us by the manufacturers. Each engine 3-view is full size and is keyed by a number to the chart. You are invited to test your skill by identifying these motors before checking chart.



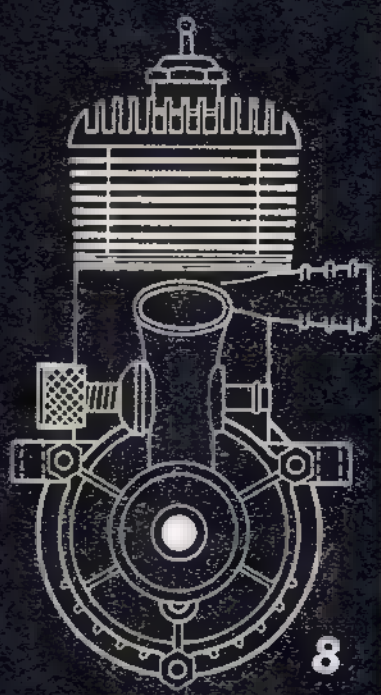
27

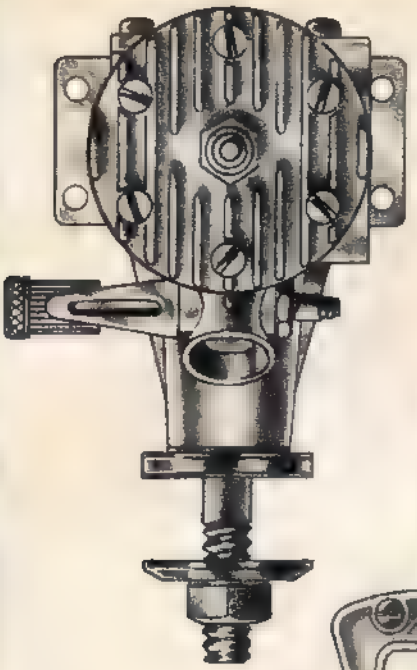
| Three View Number | Mfr. | Engine Name | Disp. | Free Flight Prop | C/L Prop. | R/C Prop | Fuel |
|---|---|---|---|---|---|---|---|
| 1 | Allyn | Sky Fury | .049 | 6/3 | 6/3 | 6/3 | Supersonic 1000 |
| | Allyn | Mar Fury | .049 | | | | Same |
| 2 | Allyn | Sea Fury Outboard | 049 | | | | Same |
| | Allyn | Sea Fury Inboard | .049 | | | | Same |
| | Atwood | Cadet | .049 | 5.5/4 | 5/3 | 5.5/4 | Ohlsson 2000 Supersonic 1000 |
| | Atwood | Cadet | .051 | 5.5/4 | | | |
| 3 | Atwood | Free Flight | .049 | | | | |
| | Atwood | Free Flight | .051 | | | | |
| | Atwood | Inboard aircooled | | | | | |
| 4 | Atwood | Inboard watercooled | | | | | |
| | Atwood | Outboard aircooled | | | | | |
| | Atwood | Outboard watercooled | | | | | |
| | Atwood | Signature | .049 | | | | |
| | Atwood | Signature | .051 | | | | |
| 5 | Cameron | L-19 | .19 | 10/4 | 9/6 | 11/4 | O&R No. 2 |
| | Cameron | L2-19 | .19 | 10/4 | 9/6 | 11/4 | Same |
| | Cameron | R-19 | .19 | 9/4 | 8 6 | 10/4 | O&R No. 4 |
| | Cameron | Ignition | .23 | 10/5 | 9/6 | 12/4 | 3 pts. white gas 1 part SAE No. 70 oil |
| 6 | Cameron | Marine "09" | .09 | 1 3/8 x 1 3/8 | | | AA |
| | Cameron | Marine "09-2" | .09 | 1 3/8 x 1 3/8 | | | Same |
| | Cameron | Race Car | .09 | | | | Same |
| | Cheminol | O&R "23" | .23 | | | | O&R Hellx Fyre No. 2 speed fuel |
| | Cheminol | O&R "29" | 29 | | | | Same |
| 7 | Cheminol | O&R "33" | .33 | | | | Same |
| | Cheminol | O&R "60" | .60 | | | | Same |
| 8 | Cheminol | O&R Marine | .29 | | | | O&R No. 2 |
| | Cheminol | Race Car | .29 | | | | O&R No. 2 |
| 9 | Cox | Space Bug | .049 | 6/3T | 6/3T | 6/3T | Thimble-Drome Racing |
| 10 | Cox | Thermal Hopper | .049 | 6/3T | 6 3T | 6/3T | Same |
| 11 | Cox | Space Bug Jr. | .049 | 6/3K | 6/3K | 6/3K | Thimble-Drome Glow |
| | Cox | Strato Bug | .049 | 6 3K | 6/3K | 6/3K | Same |
| 12 | Forster | F 29 | 29 | 10/6 | 9 6 | | Glow fuel |
| 12 | Forster | F-31 | 31 | 10,6 | 9/6 | | Same |
| | [illegible] | "99" | 99 | 15,6 | 15 6 | | Gas & oil |
| 13 | Fox | "19" | 19 | 10 3.5 | 9 4 | 10 3.5 | |
| | Fox | "25" | .25 | 11,4 | 9 5 | 11/4 | |
| | Fox | "29" | .29 | 11/5 | 10,5 | 11/5 | |
| | Fox | "35" | .35 | 11 5 | 10 6 | 11,5 | |
| | Fox | "59" | .59 | 13 5 | 11/7 | 13/5 | |
| | Henry | Veco "29" | .29 | | | | |
| | Henry | Veco "31" | .31 | | | | |
| 14 | Henry | Veco "35" | .35 | | | | |
| | Herkimer | OK Cub "049A" | 049 | 6/3 | 5.5/4 | 6.5/3 | OK Cub Glow |
| 15 | Herkimer | OK Cub "049B" | .049 | 6/3 | 5.5/4 | 6.5/3 | Same |
| | Herkimer | OK Cub "074" | .074 | 6.5/3 | 6/4 | 7/3 | Same |
| 16 | Herkimer | OK Cub "099" | .099 | 7/4 | 6.5/3 | 7/6 | Same |
| 17 | Herkimer | OK Cub "14" | .14 | 8/3 | 7/6 | 8/4 | Same |
| 18 | Herkimer | OK Cub "19" | .19 | 9/3 | 8/4 | 9/3 | Same |
| | Herkimer | OK Cub "29" | .29 | 9/6 | 9/8 | 10/4 | Same |
| 19 | Herkimer | OK Cub "049" Diesel | .049 | 6.5/3 | 6/4 | 7/3 | OK Cub Diesel |
| 20 | Herkimer | OK Cub "075" Diesel | .075 | 7/4 | 6.5/3 | 7/6 | Same |
| 21 | Holland | Wasp | .049 | | | | |
| 22 | K&B | Torpedo "15" | .15 | 8/4 | 8/5 | 9/3<br>10/3 | K&B 100<br>K&B 1000 |
| | K&B | Torpedo 2-speed "15" | .15 | | 8/5 | 9/3<br>10/3 | K&B 100 |
| | K&B | Torpedo "19" | .19 | 9/4<br>9/5 | 9/5<br>9/6 | | K&B 100<br>K&B 1000 |
| | K&B | Torpedo 2-speed "19" | .19 | | 9/6 | 10/4 | K&B 100 |
| 23 | K&B | Torpedo "23" | .23 | 9/4<br>9/5 | 9/5<br>9/6 | 10/4 | K&B 100<br>K&B 1000 |
| 24 | K&B | Torpedo "29" | .29 | 11/4 | 9/7<br>9/8 | 10/6 | Same |
| 25 | K&B | Torpedo "35" | .35 | 11/4 | 10/6 | 10/6 | Same |
| | McCoy | Baby Mac | .049 | 6/3 | 6/4 | 7/3 | McCoy A/2 Glo |
| 26 | McCoy | ".049" Diesel | .049 | 6/4 | 6/4 | 7/4 | McCoy Diesel |
| 27 | McCoy | "9" Diesel | .09 | 9/3 | 8/6 | 9/4 | Same |
| 28 | McCoy | "9" Sportsman | .09 | 7/5 | 7/6 | 8.5/3 | McCoy Glo |
| | McCoy | "19" Super Stunt | .19 | 9/4 | 9/5 | 9/5 | Same |
| | McCoy | "29" Super Stunt | .29 | 10/6 | 9/6 | 10/6 | Same |
| | McCoy | "19" Red Head | .19 | 9/5 | 9/5 | 10/4 | Same |
| | McCoy | "29" Red Head | .29 | 10/6 | 9/7 | 10/6 | Same |
| | McCoy | "60" Red Head | .60 | 12/6 | 10/9 | 12,6 | Same |

NOTE: Under propellers "T" stands for Tornado, "K" for Kaysun. Under "fuel" the word "same" means same as brand above.





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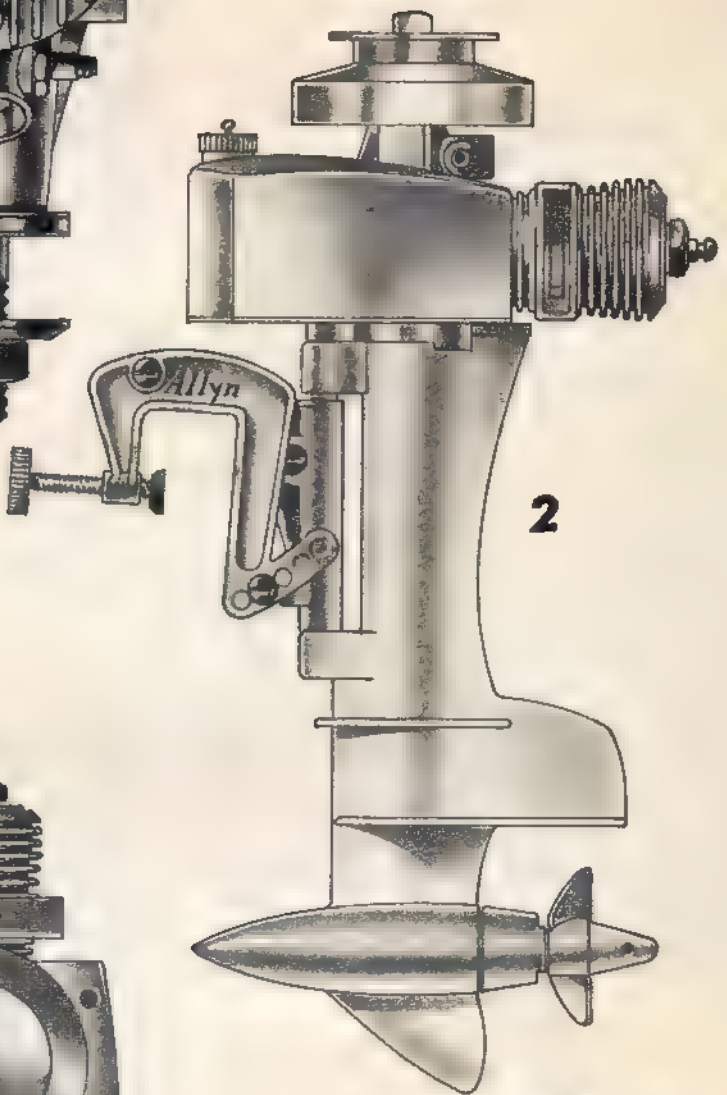


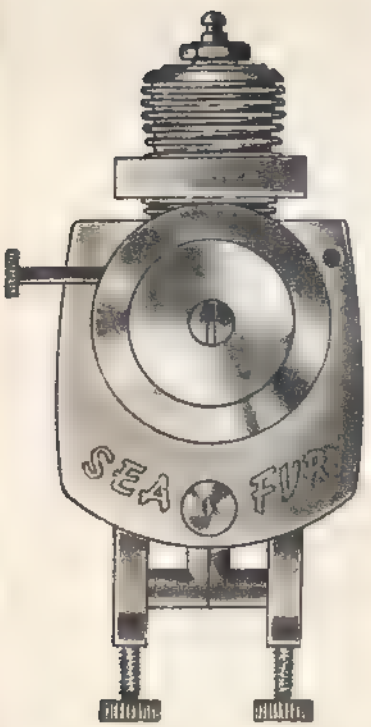


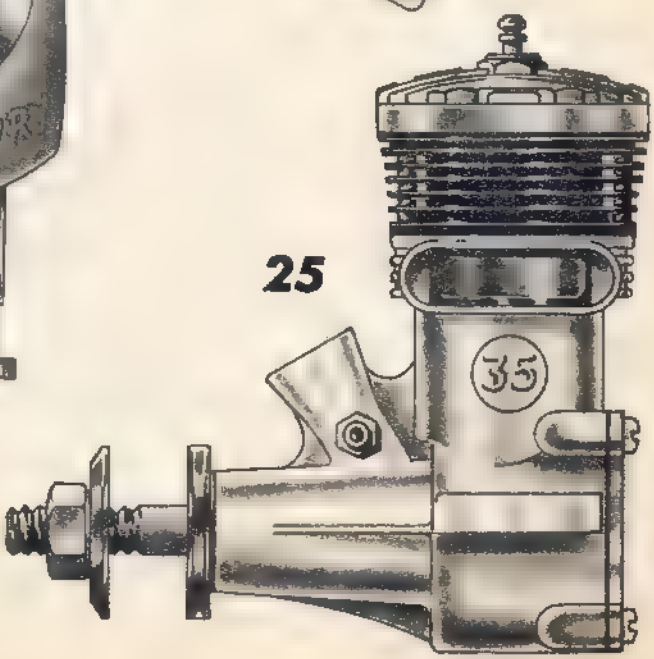

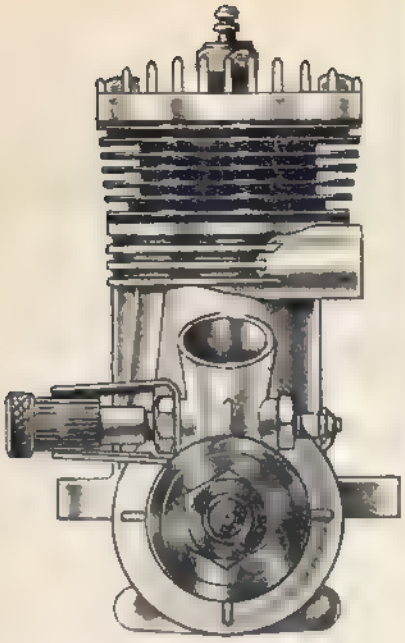

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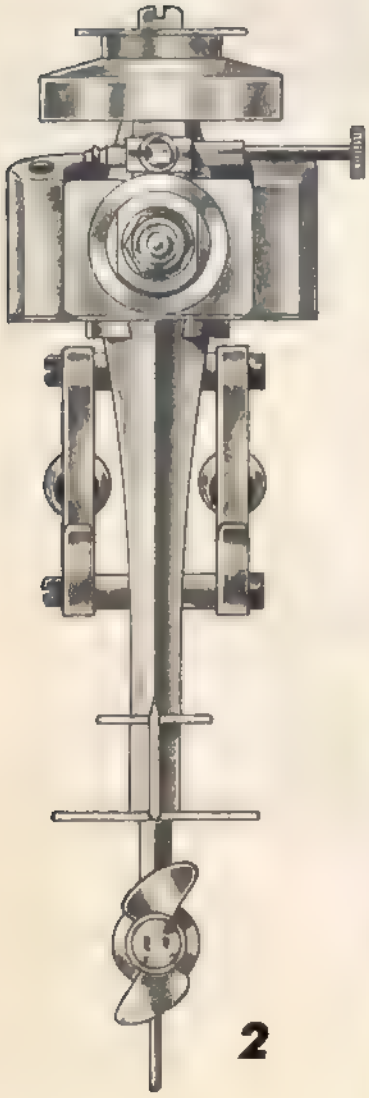

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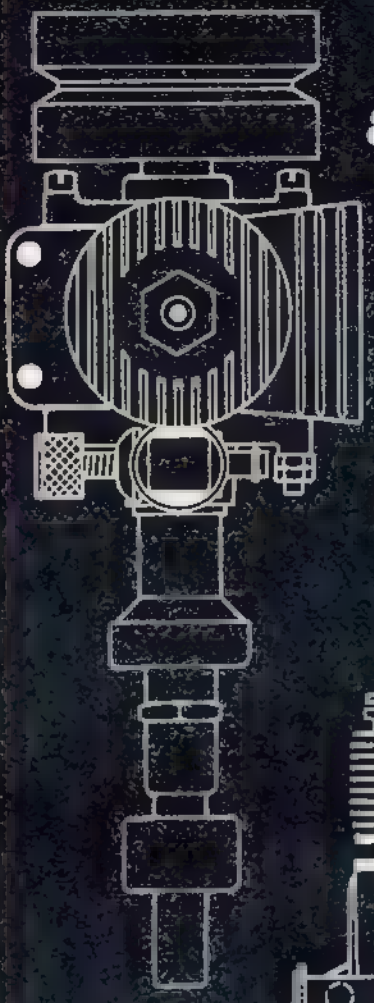

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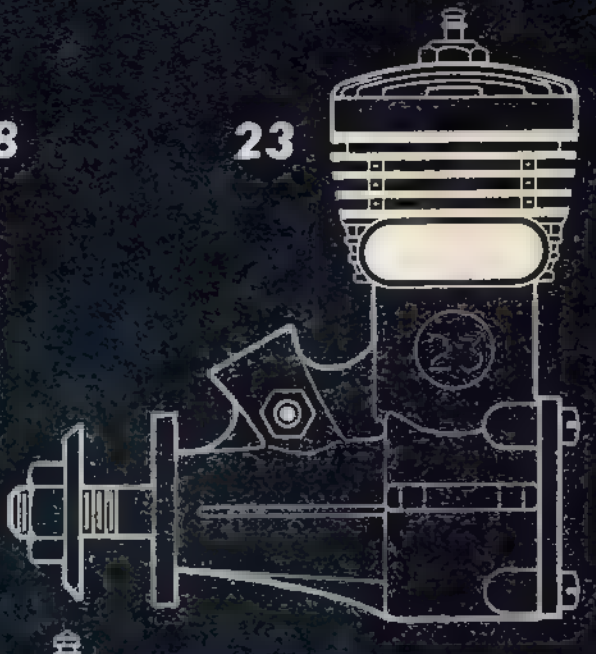

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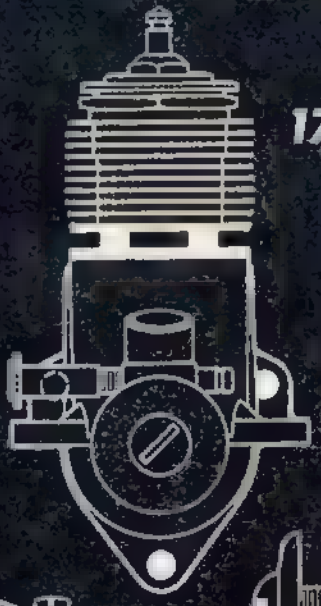

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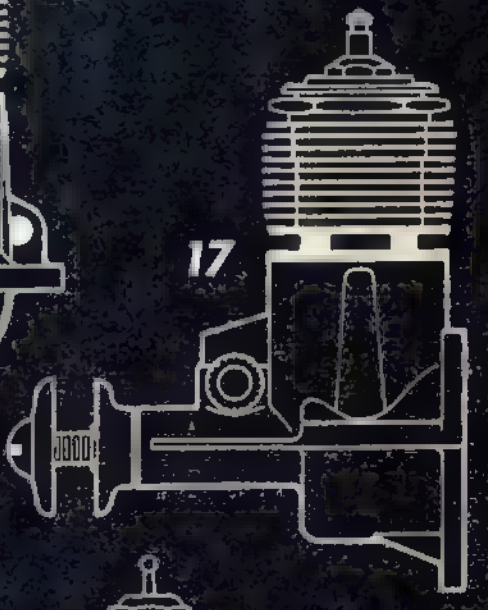

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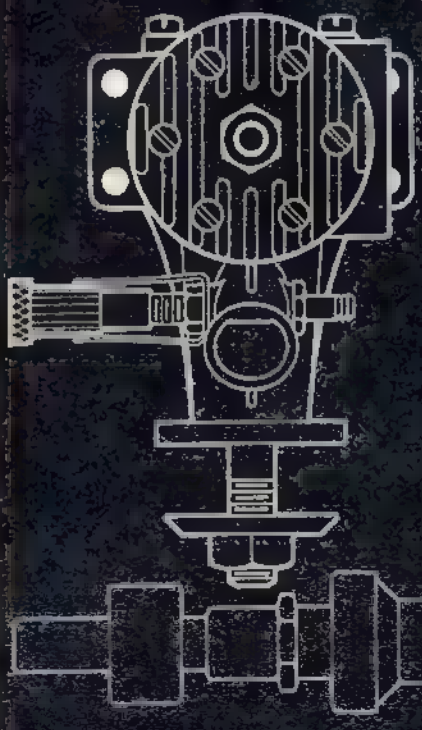

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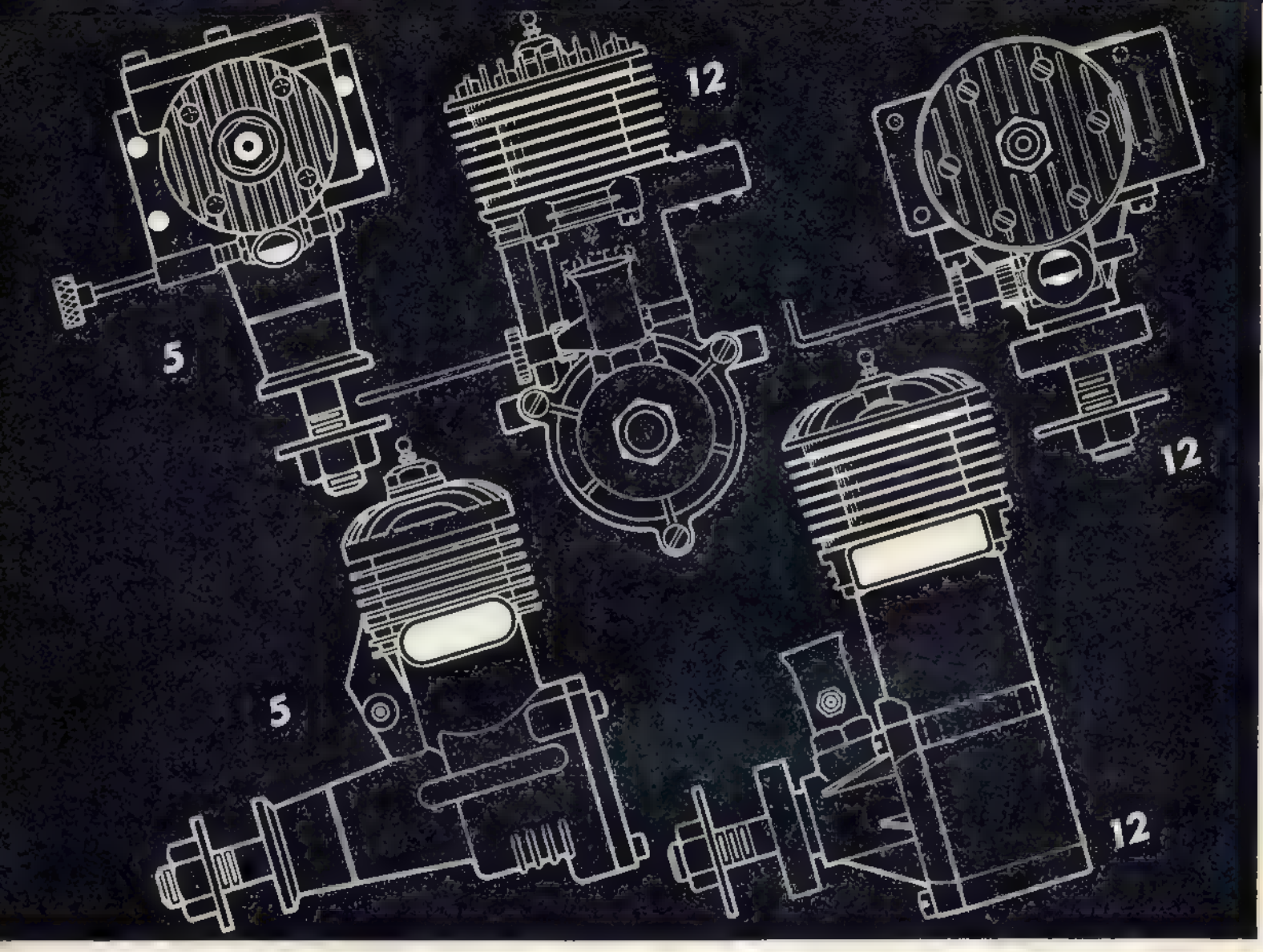


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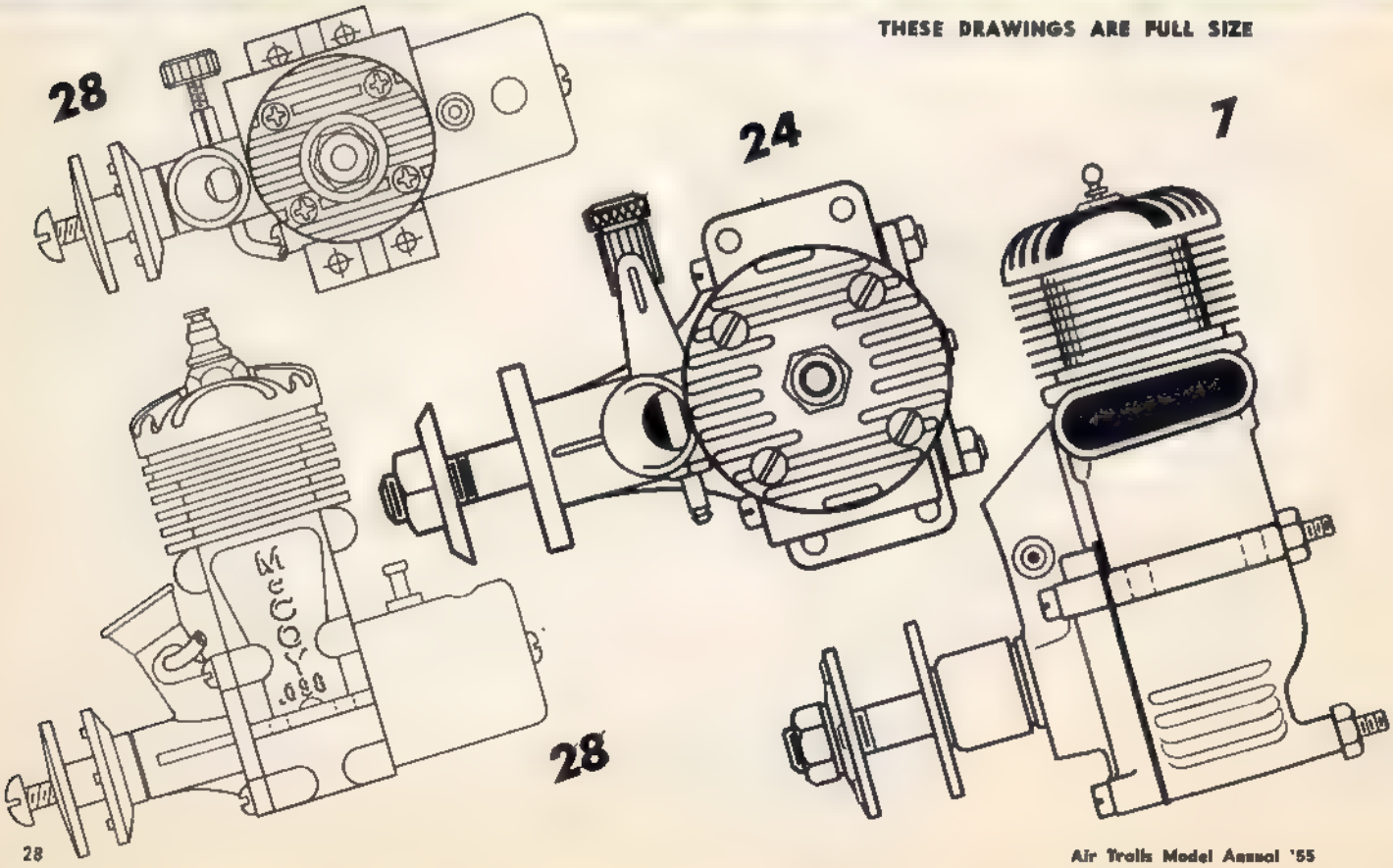

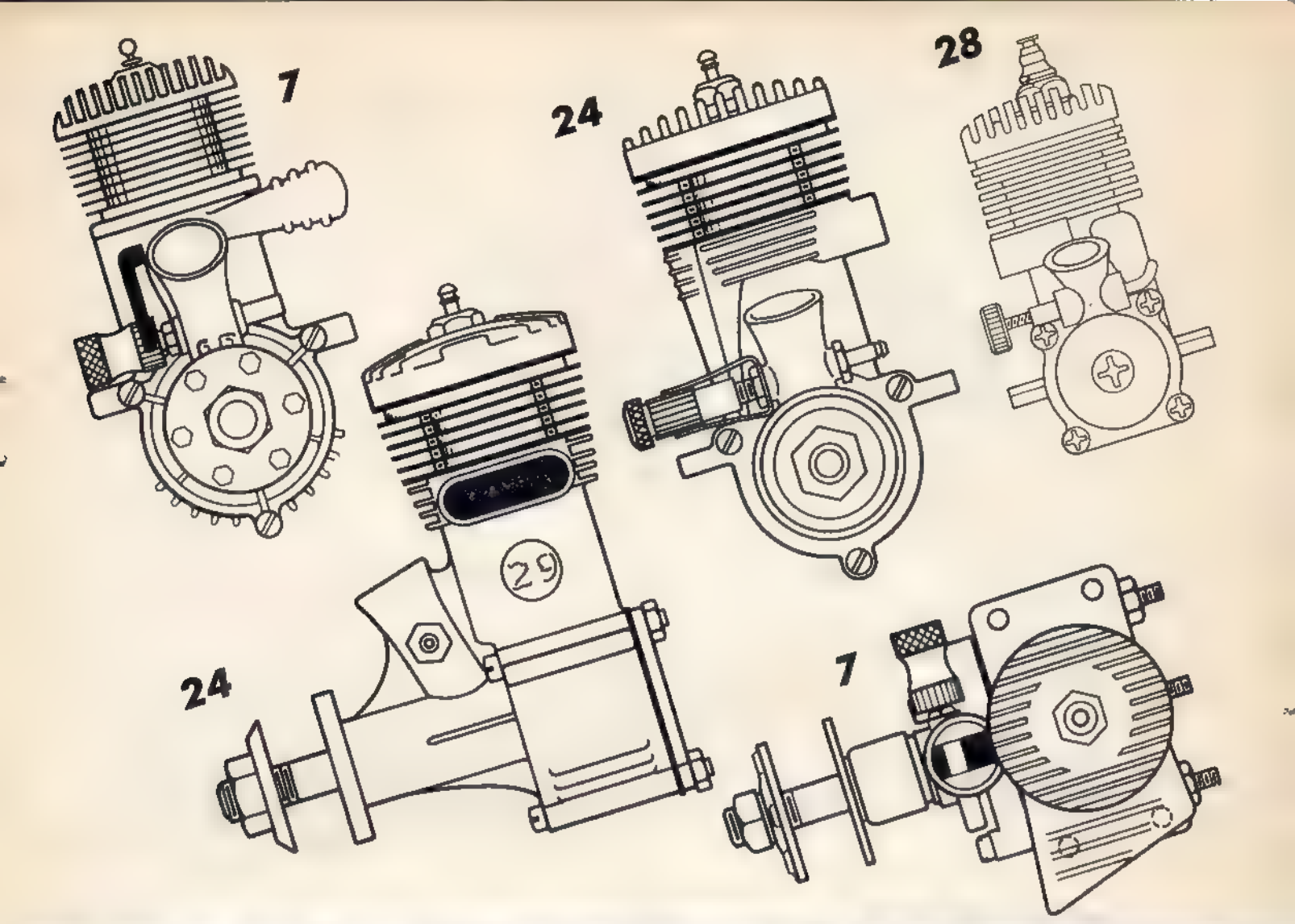
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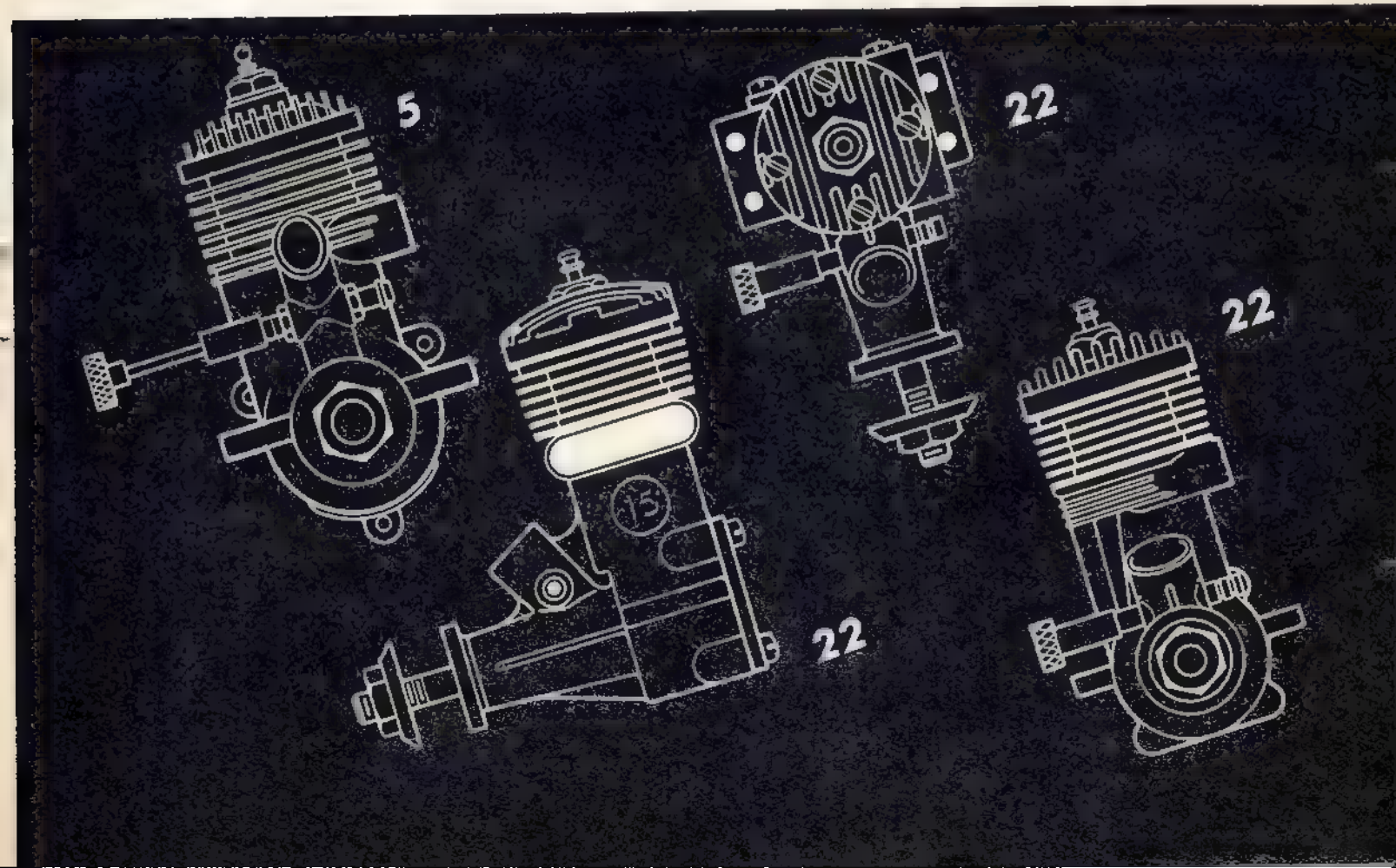
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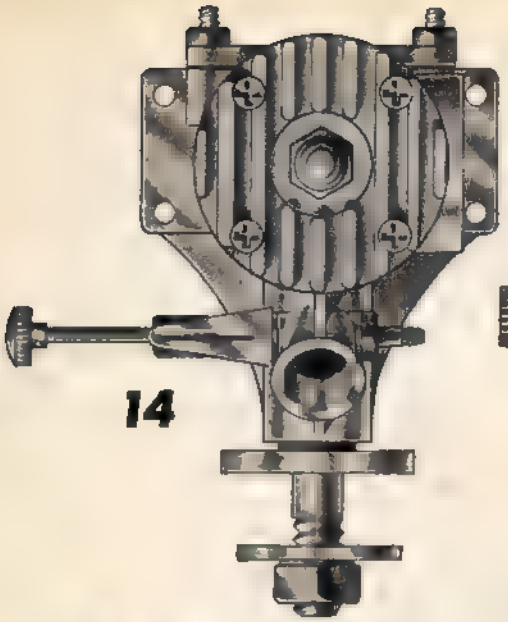

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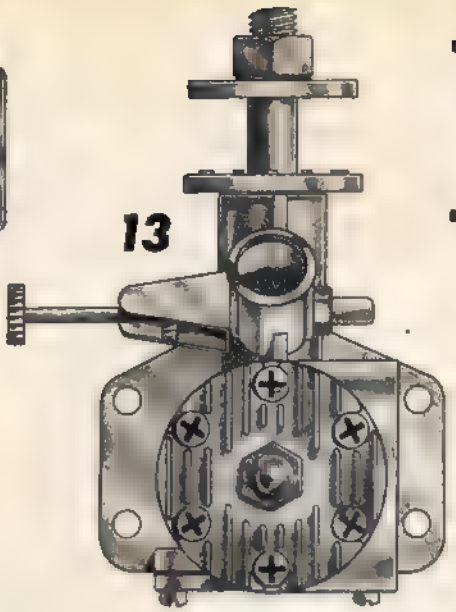

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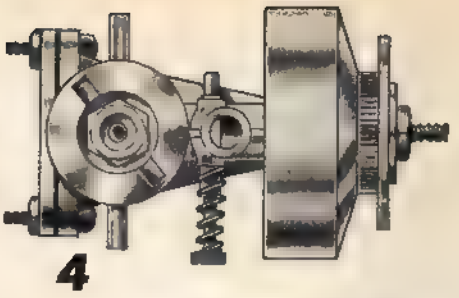

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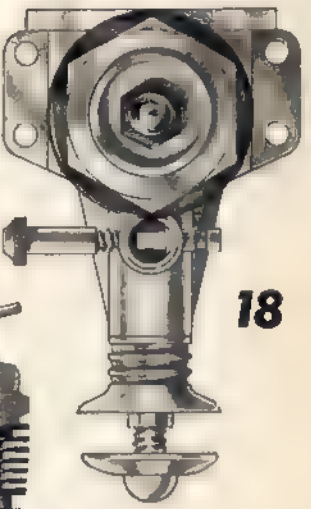

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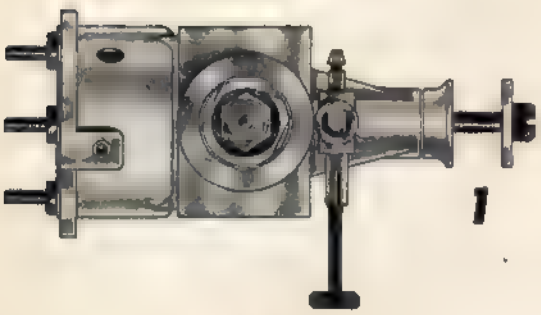

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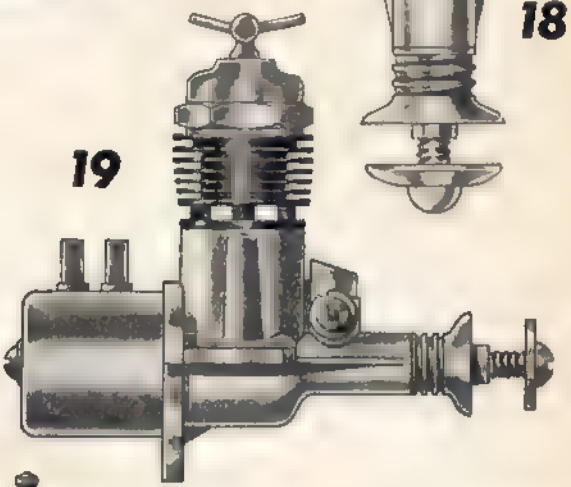

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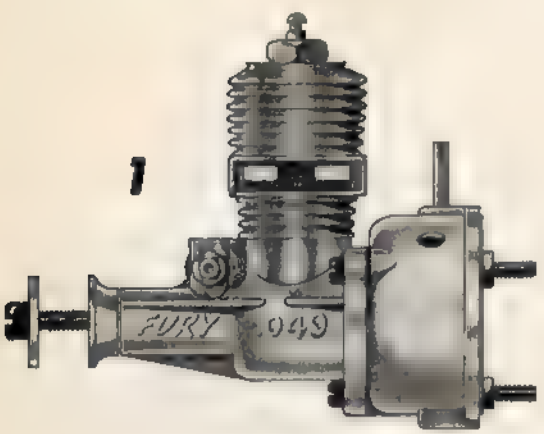

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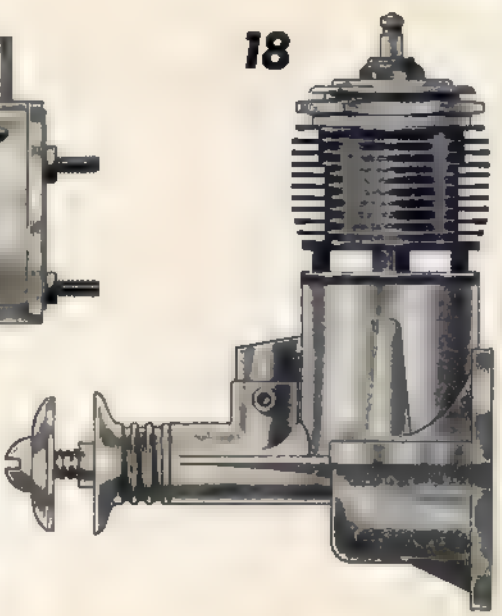

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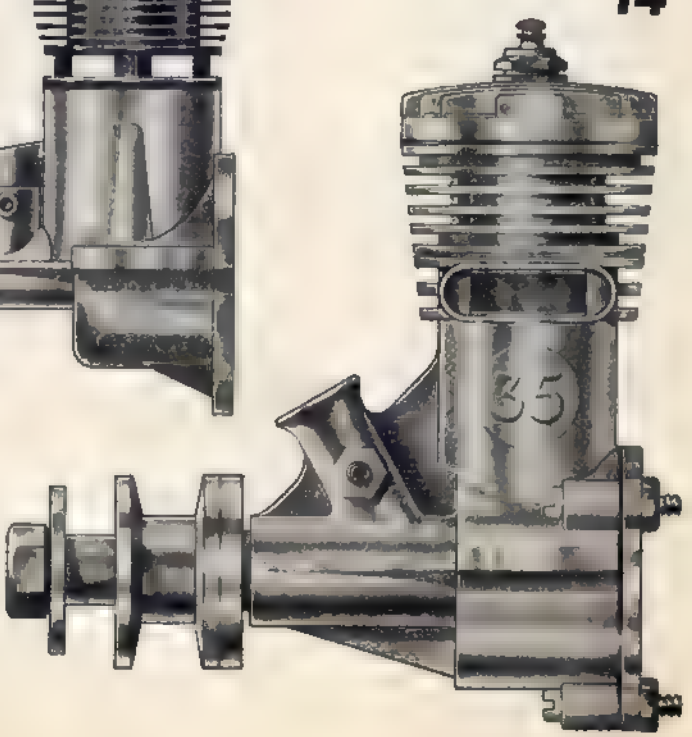

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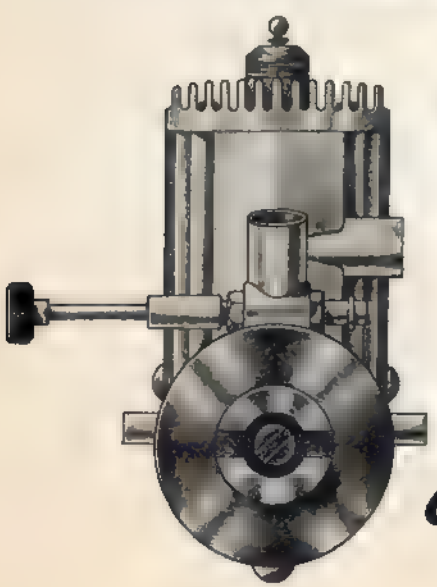

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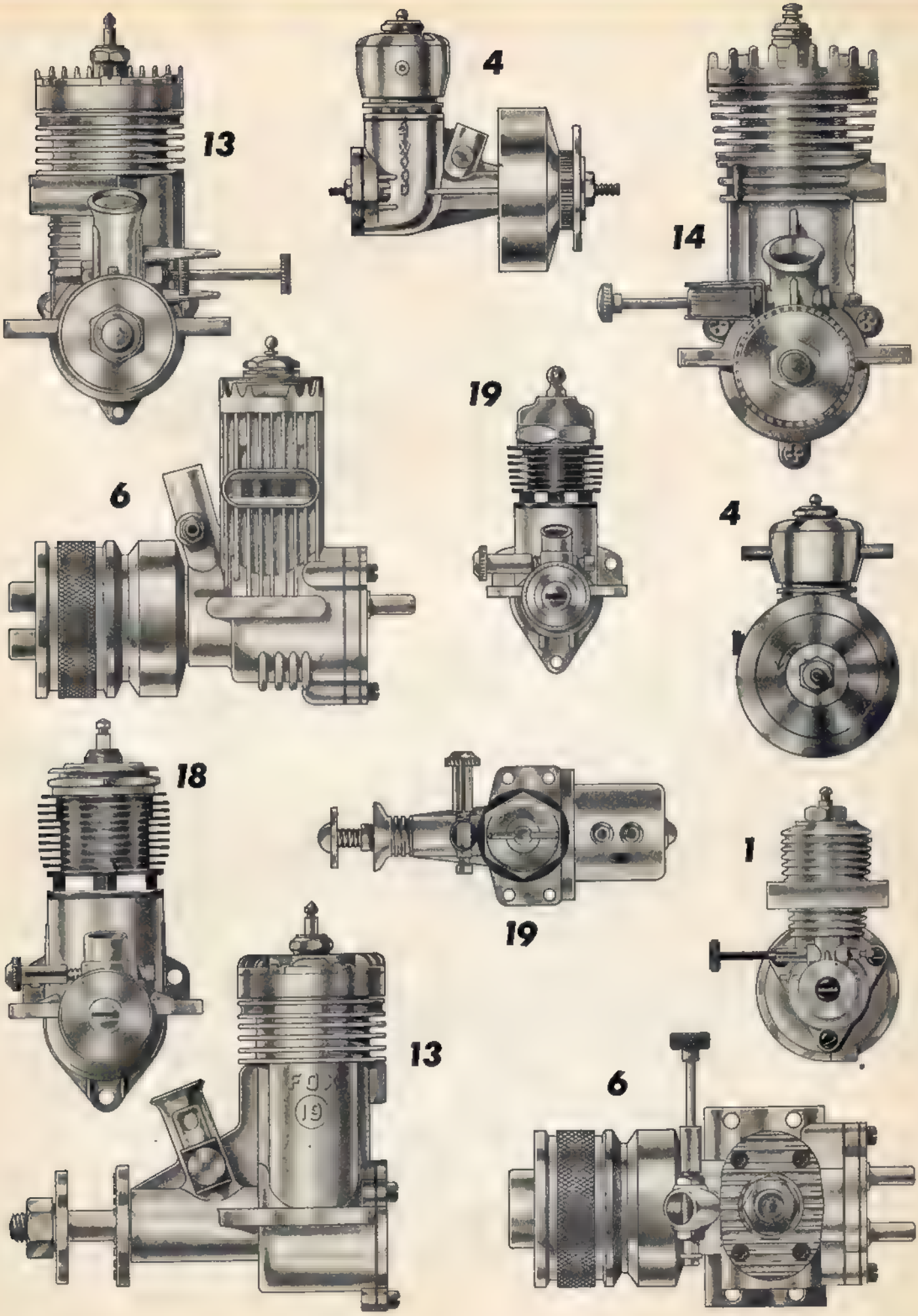
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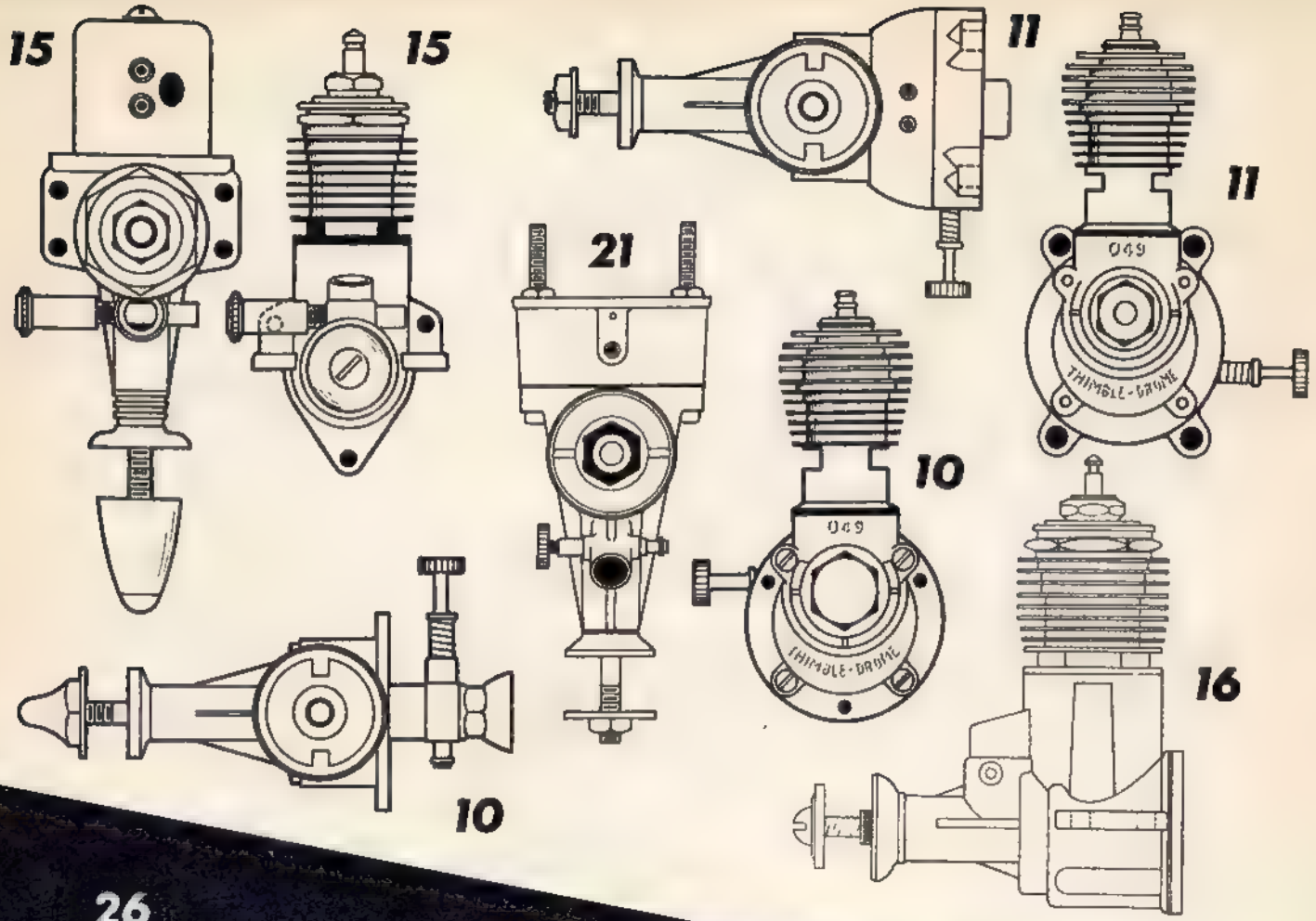
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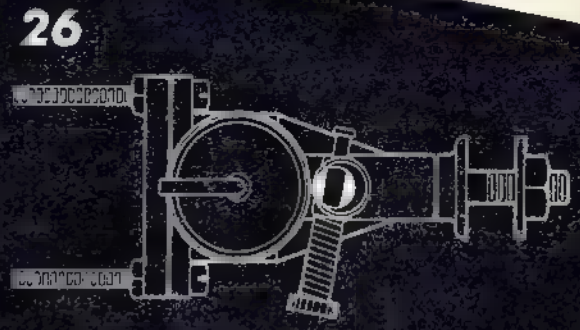
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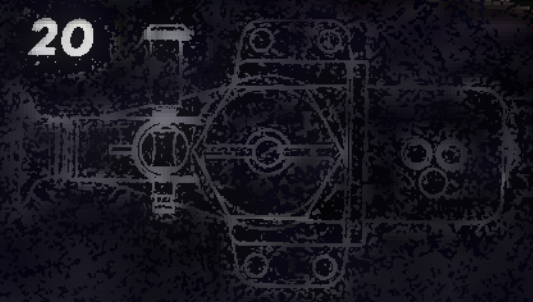
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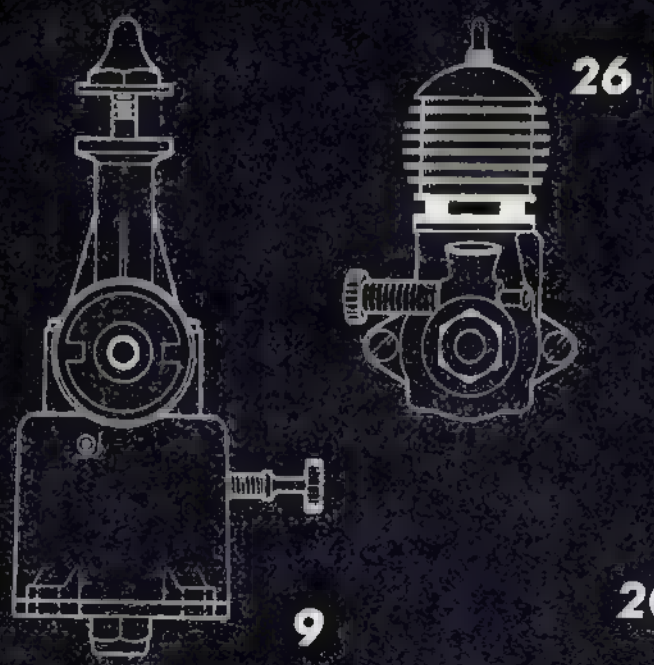
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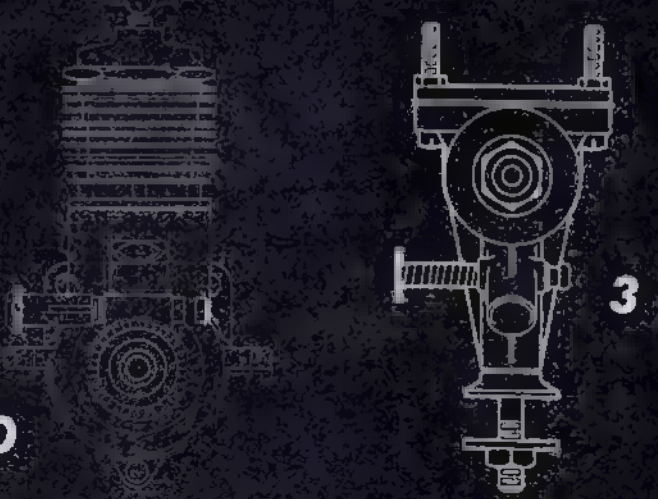
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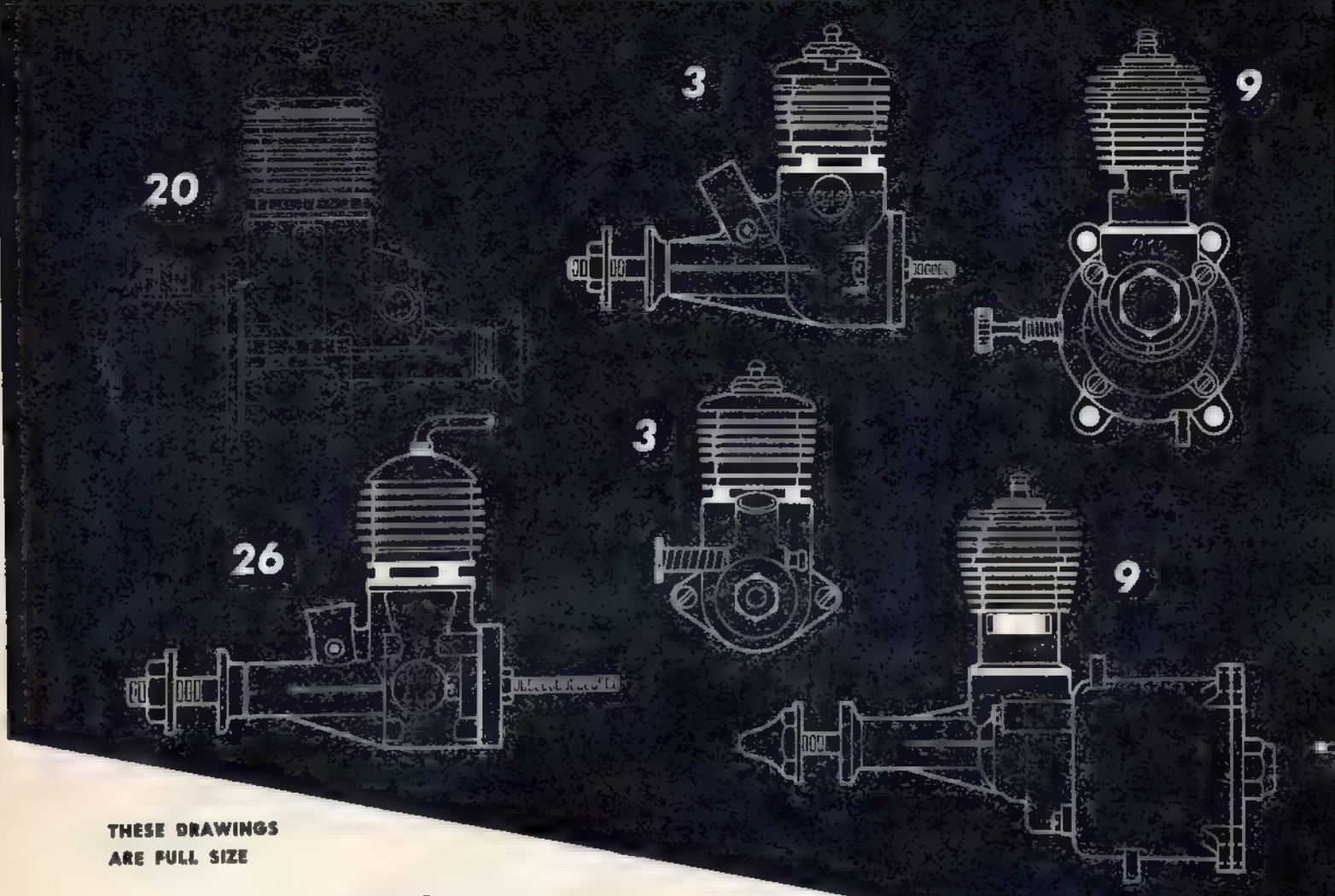


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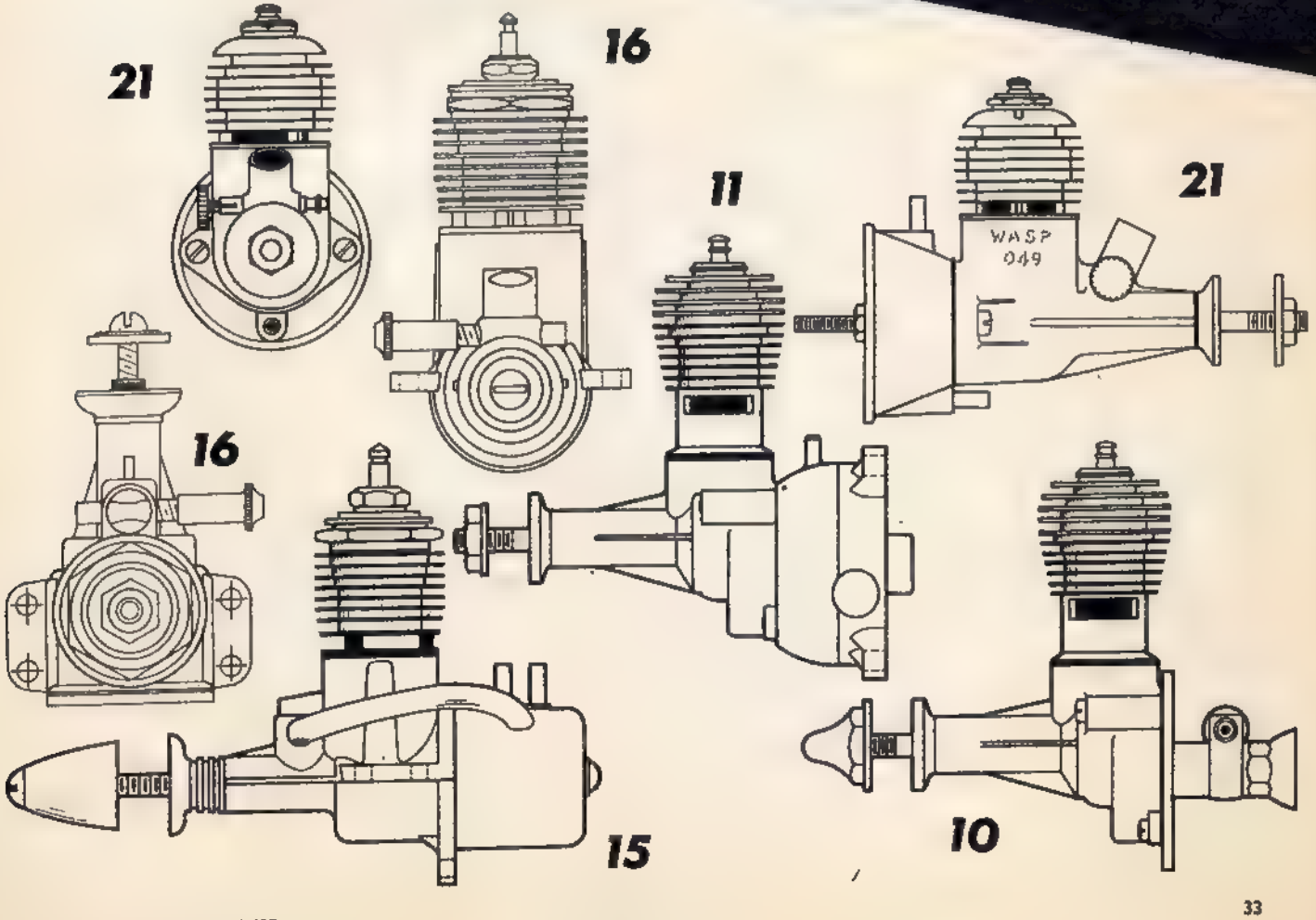
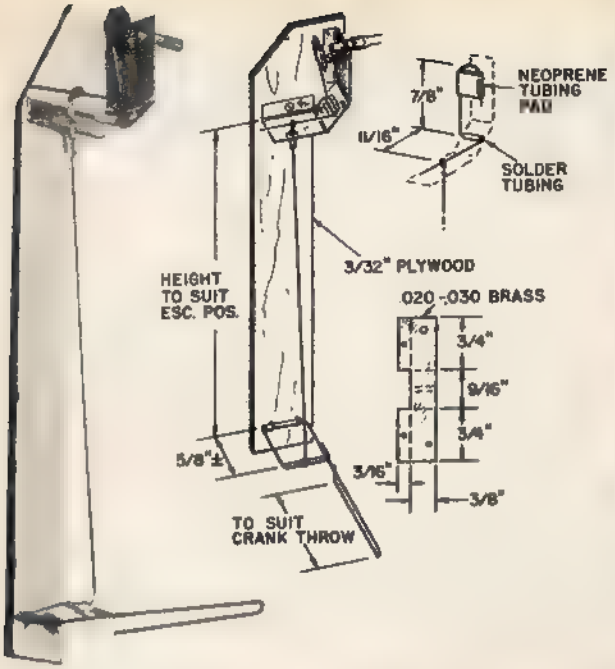





# Rudder, Motor, Elevator Control on One Channel

■ Here is a control system that will put you right into the competition with multi-channel jobs. With a single channel radio and no complicated electronics it will give right and left rudder, up and down elevator and two-speed engine control. The system is as safe as your radio receiver; we used Babcock for dependable operation.

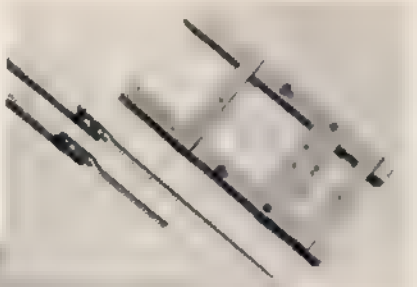
The heart of the system is the Bonner Compound escapement, which as you know gives right rudder with one pulse, left rudder with two, and a switching action on three pulses. A standard escapement, to control engine speed, is generally actuated by this third position switch and is located forward and high in the fuselage. We will also use the third position to actuate a standard two-arm escapement, but will locate it so that it may be used for both elevator and engine control. The actuated positions of the second escapement are used to move elevators while the neutrals control engine speed. This is by having the loop bearings at 90 degrees to each other.

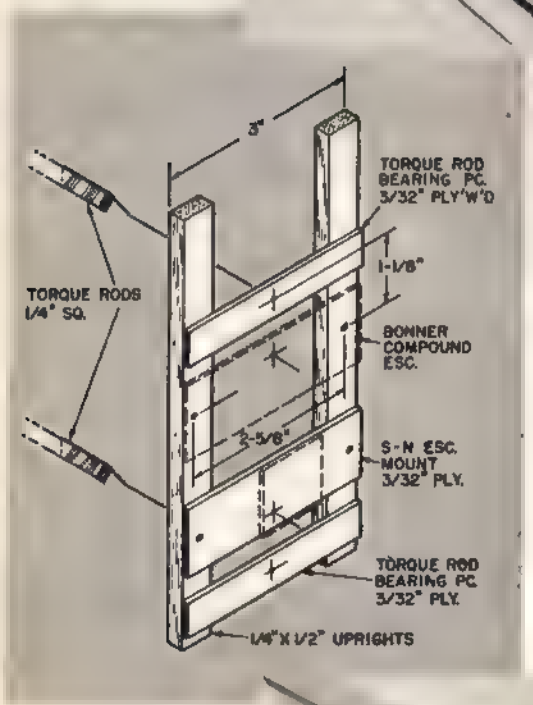
Two installations are shown. One will require a home-made motor control unit, the other uses a Bonner Motor Control.

First plan the layout of the escapements and torque rods in general as shown in the sketches and photographs, making sure of clearances. Cut two upright balsa pieces for the escapement bracket and drill for Perfect nut plates. Cut torque rod bearing pieces from 3/32" ply and drill bearing holes. Glue to uprights according to layout, keeping set-up square. Mounting holes for the Compound are 2⅜" apart and 1⅛" above or below the center line of bearing piece. Make a 1" x 3" 3/32" plywood mount for the standard escapement so that it mounts the same as the Compound.

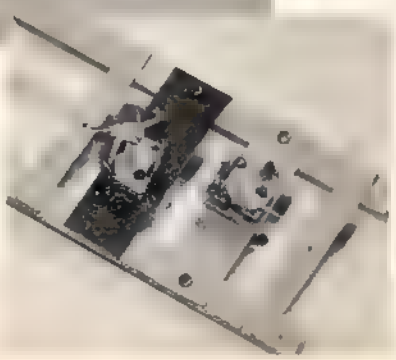
Now make two torque rods as shown, without the usual loop but with excess of wire at each end, some of which'll be cut off later. Mark on the fuselage side at rear the layout of the torque rods as an aid to drilling holes at the proper angle. Glue in an eyelet or short piece of tubing as a bearing.

Install torque rods through rear bearings and slide escapement set-up over front wires with an eyelet on each side of

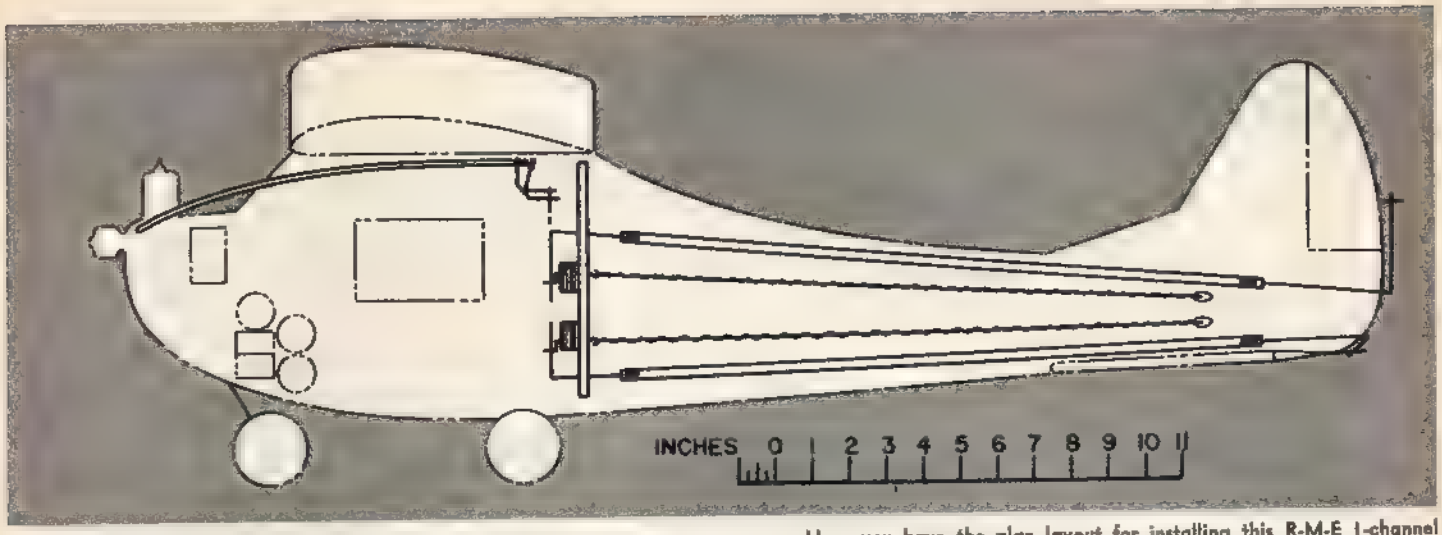





Mock-up for photograph represents inside of Trixter fuselage. The specialized loop is optional; note eyelets used as thrust bearings.



The dimensions given here are for a two-escapement mounting to fit the R/C Guillow Trixter model. An unusual and effective idea in the use of Perfect (brand) nut plates permitting unit to be removed easily for adjustment or wiring.


Here you have the plan layout for installing this R-M-E 1-channel control in the Trixter. Author says to use full-size drawings and actual escapements and torque rods to make certain of clearances. Motor control can be commercial or home-made (far left).

bearing to take care of thrust. Glue the set-up to fuselage, after making sure the torque rods turn freely. Mount escapements.

If a left turn is noted while holding up or down elevator install a loop as suggested by Dick Schumacher which will overcome this condition and also the slight over-throw resulting with the usual straight loop. Both this loop and the regular one for elevator are soldered in place using a short length of brass tubing to reinforce the joint. Using the special loop will require a *light* return-to-neutral spring.

Adjust the dimensions of the home-made motor control unit to suit your plane, being sure to keep the air line as high as possible in cabin. The air line should be a downhill run to the engine needle valve with no sags. Also be sure to have the loop bearing on center with the escapement so the throw will be equal. This will keep the air line open in both actuated positions, resulting in a high speed motor run while holding up or down elevator.

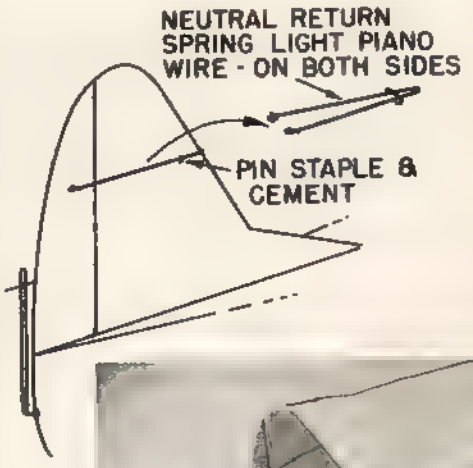
Locating and adjustment will be easier if the complete unit is made on a piece of thin plywood. The unit must work freely. If there is any binding reheat the soldered joints involved to let the parts align themselves. The valve pad is a short section of neoprene tubing slipped over the wire loop.

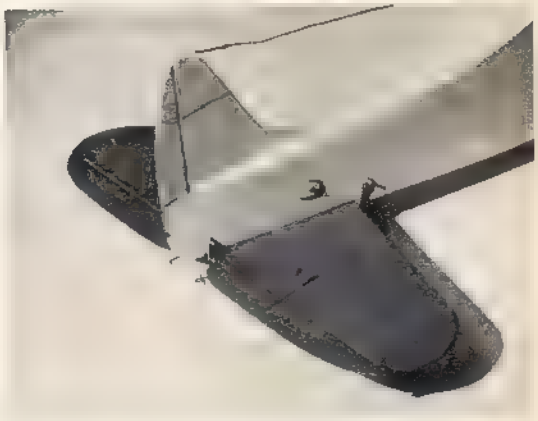
Construction of the elevators will vary according to the design of the stabilizer used. Elevators must, however, work freely (absolutely "floppy"), should be (static) balanced and if possible, aerodynamically (hinged back from the leading edge). The Trixter Beam stabilizer was easy to adapt for elevators since the attaching rubbers could pass directly over the center bearing. It has small aerodynamic balance, but works very well. The counterbalances are solder and wire. The loop for the elevators may go either right or left depending on the sequence desired.

The Trixter was set up as follows: 1 high speed, 2 up elev. still in high speed, 3 low speed, 4 down elev. and into high speed. Loops are started while in low speed. As long as you can hear the engine run you will know for sure what elevator action is coming up, so there is nothing to remember until the end of the engine run.

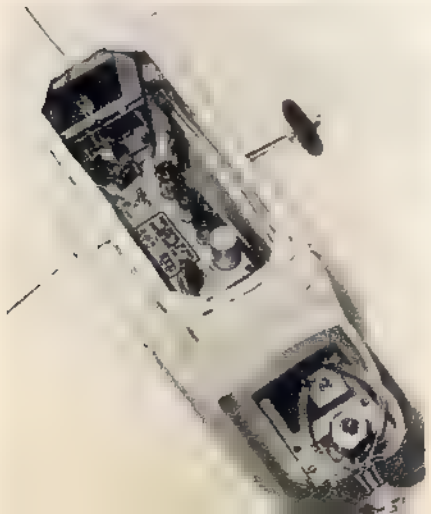
If you feel that you must have elevators this is probably as simple and inexpensive a way as possible. You may of course leave off either elevator or motor control loop if desired, and best of all fly along with right and left rudder without the necessity of going through an elevator position.

—JACKSON INGHAM, JR.

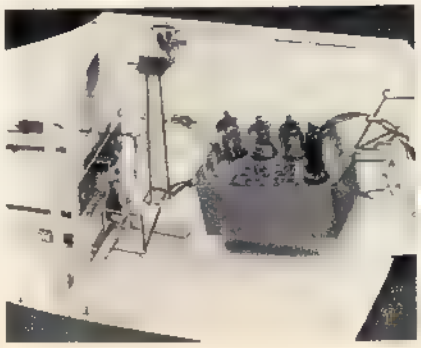


Return-to-neutral spring is on both sides of rudder. To test "lightness" of spring, run down escapement rubber turns when checking. Very little pressure for neutral.



Shown attached to side of dummy fuselage: "own" motor control. Line runs downhill.



Installed here is Bonner's motor control unit. Off-center elevator torque rod works O.K.


Certainly one of the most unusual airplanes to make its bow in recent years, the Central Lamson Corporation's Air Tractor was designed not for looks, but to be completely functional. Among many money-saving ideas and production shortcuts are similar panels in each of the four wings and same size and shape elevators and rudder. The back of the fuselage has been left open to facilitate cleaning after spray job is completed. Note good pilot visibility.

# LAMSON AIR TRACTOR

**Here's an exciting project for the control line flying scale air-modeler! Craft can be built with stunt airfoil if desired**

**By PAUL J. PALANEK**

■ Our "Duster" model is a copy of Central-Lamson's first crop duster. A unique innovation on the prototype is the instrument arrangement outboard of the cockpit, on the gull trailing edges. Instrumentation is so arranged for the purposes of safety. At all times they are in the pilot's line of sight. This is most important since crop dusting is mostly low-level flying.

The bipe arrangement lends itself nicely to control-line flying. But although primarily a sport flyer, the model can be made quite maneuverable. Substitute a stunt airfoil for the one shown, and all you die-hard stunt fans will have an amazing scale stunter.

At first, the nose moment appears somewhat short; don't let this bother you. Careful balancing will erase all doubts. Check carefully the balance point given in the drawings—more about this later.

Building can commence with most any structure, and since we enjoy tackling a tough section let's start with the wings. Both are built in a similiar manner, with a little more care required on the gull arrangement of the upper wing. Ruggedness is the keynote as can be seen from the leading and trailing edge wood selections. Using the recommended balsa, shape all ribs from "W-1" through "W-6." Check the drawing for proper rib thickness. The entire leading edges are first assembled over the front view, using the ¼" sheet balsa reinforcement and placing as shown. Allow the joints to dry thoroughly, as this will avoid heartache later. Build the lower panels, starting with the outer sections and finishing up with the center areas. While drying, fasten in place the bellcrank platform, using ⅛" plywood. Above this, secure the ½" x 1" balsa spacer. When completely dried, bolt the 3" bellcrank in place.

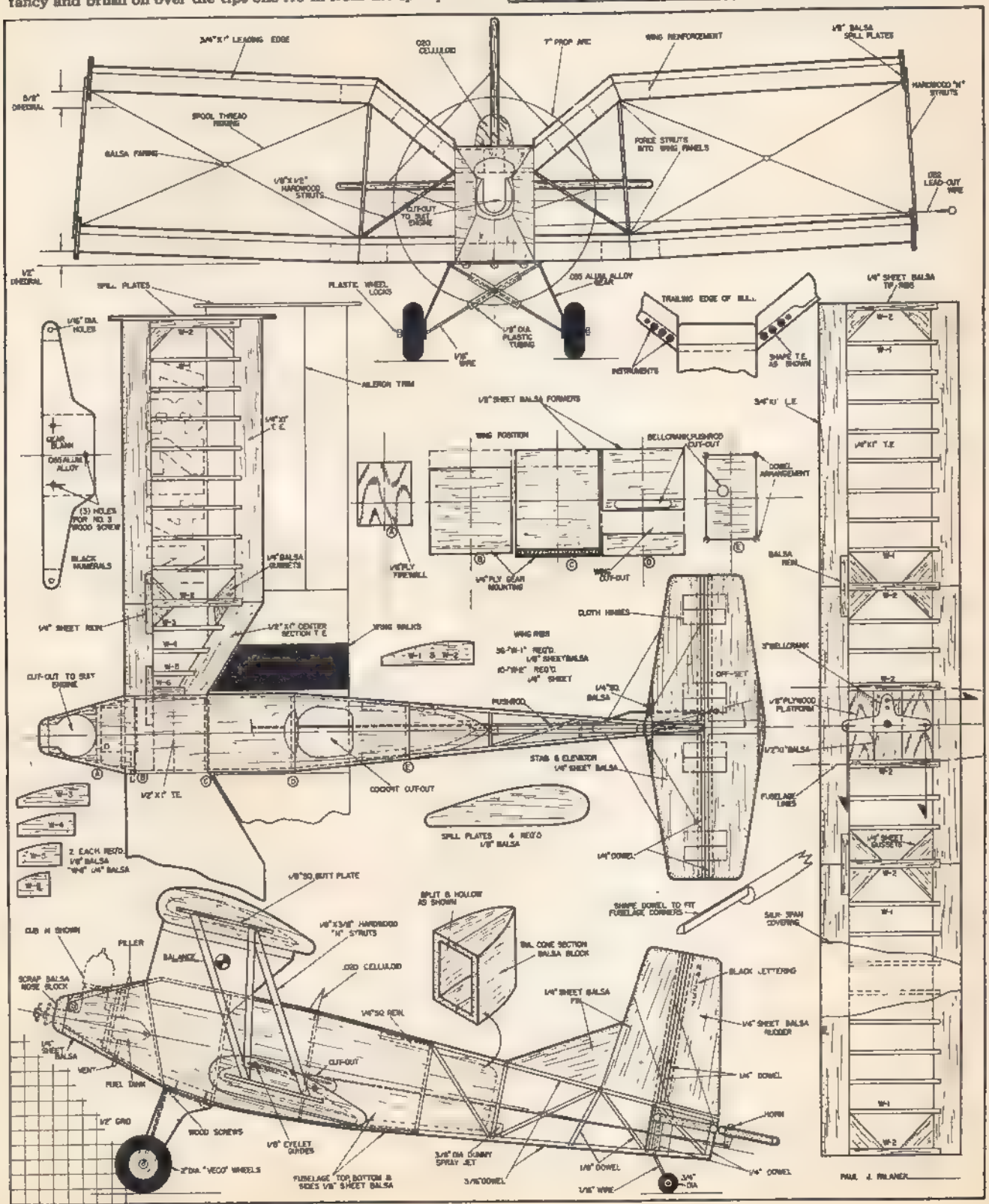
The upper panel is assembled by fastening your enlarged drawing to the working surface so that only the panel being built is on the table. This will permit the gull section to overhang the table or workbench. Both halves are built using this technique, following with the completion of the center section. The gull trailing edge, ½" x 1", is cemented in place while off the working surface. Shape to accommodate the dummy instruments belonging there. A point to remember is that all gussets shown should be added, using the recommended ¼" balsa sheet or strip stock. These gussets should be used particularly on the upper gull wing.

# CENTRAL-LAMSON AIR TRACTOR

Allow sufficient time for thorough drying, then shape both upper and lower panels to the contours shown. Finish-sand all areas using a good grade "00" sandpaper. A wise practice is to pre-dope all areas coming in contact with the paper covering. This will prevent the moisture from seeping through the paper into the wood structure and swelling the wood. Select a good grade of Silkspan and, using care, cover both surfaces and avoid wrinkles. Wet with water, and allow to dry thoroughly. Brush several coats of clear dope on both surfaces, sanding lightly after each application. To complete the panels, fasten the ⅛" sheet balsa spill plates to the tip ribs. Then, using Testors orange yellow pigmented dopes, brush on two coats on each surface. To offset the yellow, select a color to suit your fancy and brush on over the tips one rib in from the spill plates.

On the tail surfaces is employed a similar technique inherent in the Lamson design. All tail surfaces are interchangeable with one another. This reduces building time considerably. Select even-grain sheet balsa and proceed to blank out the various sections. Note that we use ¼" dia. dowel at all hinge points. To insure a snug fit for these dowels, shape a concave section, permitting the dowels to recess halfway as illustrated in the drawings. On both the leading and trailing edges of the stab assembly, place a ¼" sq. tie-in member of balsa for added support. (*Additional building details will be found on the full-size plans.*)

**Full size plans for constructing Polanek's Central-Lamson crop-spraying control line model are part of Group Plan #55 from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (50¢)**



# NATIONAL CHAMPIONSHIP RADIO CONTROL COMPETITION —1954—

## GLENVIEW NAVAL AIR STATION CHICAGO, ILL.

■ Like the whole nationals meet the R/C event was the biggest ever—and it was big in all ways. There were more registrations than ever before, more flyers were actually processed and ready to try a flight—and there was more interference than ever.

There were about 200 R/C registrations, and 129 of these actually handed their sheets to the recorders and apparently expected to fly—but only 72 made actual scores, and quite a few of these were only a few points. A total of 263 flights were recorded, during which some points were scored.

Of course, the entire Nats were shortened, but R/C was shortened even more; for some unexplained reason, the R/C event was held for only four days, and this, together with the huge number of entries was one of the main reasons for a lot of the headaches that ensued. Fortunately, it was possible to run R/C from 7 A.M. to 7 P.M., on the first two days; Saturday and Sunday, R/C—and all other events—had to be shut down at 2:30 P.M., to clear the field for the Navy air show. Thus, there was a total of only 39 flying hours possible—and of these, almost nine were lost due to interference, rain and other causes.

Mindful of the long lines of flyers who waited in the broiling sun at the 1953 Nats, a system was set up whereby only the first ten men were expected to line up. This certainly made it lots easier for those whose Flight Score Sheets were at the bottom of the pile.

Another cause of lots of confusion this year was the fact that R/C—and all free flight events—had been scheduled to take place at Chicagoland Airport, about 10 miles north of the Glenview Naval Station, for the first two days. Chicagoland is a private field with no hard-paved runways, and when some of the radio boys noted this quite a wail went up, for they could see real difficulty in making R.O.G. flights, even though the grass was clipped short. So R/C Director Ernie Kratzet of Detroit went to bat, and was able to have the R/C event situated on concrete runways for all four days of the meet.

This shift brought on more trouble. R/C and free flight had been transferred to Chicagoland because the Navy wanted to keep some of its jet planes in operation during Thursday and Friday. And with planes in the air, they had to keep radar equipment going. When we arrived a bit late at the R/C runway on Thursday morning, we were greeted by a glum group of R/Cers—most of the first half dozen planes that went up had piled into the ground shortly after take-off, the operators claiming interference. One or two *might* have been coincidence, but not this many, so our trusty Interference Locator was unlimbered, and we went out to the spot near the 500 ft. flag, where most of the stricken planes had seemed to hit an invisible barrier.

Sure enough, intermittent signals could be heard on both 27 and 50 mc. We soon noticed that the "beeps" only came in as several radar antennas on a nearby hangar swept around directly toward us. Naval couriers were dispatched to see what could be done about getting this radar equipment off the air, but it was an hour or more before this was finally accomplished. Meanwhile, some flyers had been able to get good flights in, though it isn't known why some were bothered by this interference and others were not. Whatever the reason, it points up Lesson Number One of the '54 Nats R/C Event—don't try to fly such an event at any Service field unless all electronic equipment is "secured."

Even though this radar equipment was shut down for most of the rest of the meet (aside from an hour or so the next day), interference from other sources continued to be a problem. Some of it was believed to be diathermy or industrial heating equipment, and this brings us to Lesson Number Two—don't ever schedule an R/C event near any large population area!

Undoubtedly some of the interference came from other R/C transmitters—or perhaps even from receivers. It was noticed several times, when we had a signal coming into the Locator, that as soon as the R/C officials would call out interference over the PA system, the signal would abruptly cease. The R/C flying area on the first two days was located only a couple hundred yards from the "workshop hangar"; it had been felt safe to allow transmitters to be turned on inside this hangar, especially since the metal doors on the end toward the R/C area were kept closed. Whether some of the R/F leaked out, or whether the signals were flyers testing ships at other localities is not known.

(*Continued on page* 40)

## WHAT THEY FLEW IN R/C

■ A word of explanation: In the following listing, all flyers were on 27¼ mc., used vertical whip antenna and push-button, glow ignition, unless otherwise listed; those with proportional control utilized pulser for keying. All 465 mc. equipment is Citizen-Ship with about 2 watt input, and C-S receiver. All 2-tube receivers listed are similar to that developed by Control Research. Data omitted on well-known commercial R/C equipment and plane kits; area and span of popular kit and magazine article planes are: Bootstraps, 350 and 54; Buzzer'd, 720, 72; Live Wire Trainer, 432, 48; Live Wire Senior, 750, 66; Live Wire Cruiser, 775, 65; Beam, 372, 50; Rudderbug, 850, 74; Sterling Piper Tri-Pacer, 504, 59; Rudolph, 590, 60; RC-Master, 480, 48; Royal Rudderbug, 600, 62; Liberty Belle, 315, 42.

Listed in this order are: flyer's name, ham call if any, home city, age, number of years in R/C, club; plane with span, area, wing loading (span and area omitted if one of above kit or magazine jobs), engine and prop; type of control system (proportional, escapement, etc.) followed by receiver and transmitter data, type of control box if other than button or pulser. Last number printed shows place, if any, for top 29 flyers; T shows a tie.

EARL T. ANDERSON, Huntington Woods, Mich., Detroit R/C, 26-3. LW Trainer with 18.5 oz. loading, Webra 15 diesel, 10/6 proport. rudder on escapement, 465 mc. 21.

ROBERT BECKMAN, Albany, Calif., 27-5, Pacific R/C Assoc. Mod. scale Piper Cub, 19 oz. load., Spitfire on spark with 14/6 prop. RME with AF reeds, original rec. with 2-3S4 and 1-1S5, orig. trans. with 1-3A4 and 1-3S4, .7 W input. Stick and button controls. 11.

CLIFFORD BENNETT, South Bend, Ind. 35-3. Orig. plane with 6' span, 22 6 oz. loading, K&B 29 with 11/8. RME with compound escs. for R&M, servo on elev., Macnabb 465 and 27 receivers, own 6C4 27¼ mc. trans., pushbuttons.

RICHARD BENNETT, South Bend, Ind., 12-1, LW Trainer with 16 oz. loading, K&B 15 and 9/3. RM with escapements, C-S 27¼ rec., orig. 4½ W trans.

ROBERT BENNETT, South Bend, Ind., 17-2 LW Senior, with trike gear and invert. K&B 19, 10/4. RM with 465 mc.

HOWARD BONNER, Los Angeles Calif., 37-5, L. A. R/C. Beam, 20 oz. load., Fox .19 with 9/4. RME with escapements, orig. rec. using tuned relays, 3-CK506, 2-CK536 tubes. Babcock 3-chan. trans. Pushbuttons. 2.

DONALD F. BOSS, Freeport, Ill., 26-1, Flying Tank Circuits Beam with proportional rudder. 2-tube rec., ESSCO trans.

RICHARD BRANSTNER, Birmingham, Mich., 24-3. Detroit R/C LW Cruiser with 21 oz loading, K&B 32, 13/6 prop. RME with Schmidt reed equip.

KENTON H. BRENEGAN, New Castle, Del., 33-½, Wilmington Sky Blazers. Beefed-up Beam. Escapement rudder. C-S 27¼ rec. Own 5 W trans. using one 3D6.

WARD T. BRENNAN, Mt. Clemens, Mich., 32-4, Detroit R/C. Beam with rear wheels moved forward. RE with compound escapements and servo. C-S 27¼ rec., own 5 W trans. with 6AK6-6AQ5. 20.

WALTER CHAMBERS 32-5, ROY VINE 24 5 (team) Columbus, Ohio, Columbus Model Flyers. 20" span Flying Saucer, 500 sq. in., 29 engine with 9/6 prop. Rudder with servo. 27¼ Controlaire rec. Aristrol trans. 3 W. input.

RONALD CHANDLER, Ottumwa, Iowa, 27-2 Hornets. 5' span orig. with 1230 sq. in., 18.8 oz. loading, Fox .35, 10/6 prop. RME, proportional rudder. Babcock 3-channel trans. and rec.

(Mrs.) ULDINE CHANDLER, Ottumwa, Iowa, 21-1, Skyscrapers, Buzzer'd with trike gear, 21.6 loading. RME as above.

RALPH B. COLBY, Cedar Rapids, Iowa, 36-3, Hawkeye Aeroneers. 5' span original 660 sq. in., K&B .19 with 10/6 prop. Proport. rudder with C-S 465 equipment.

VIRSTER COLEMAN, 44-2, Chicago, Ill. Mod. Live Wire with .29 engine and 11/5 prop. Mac II transmitter and C-S receiver, rudder only.

L. D. CRISP, Perrysville, Ind. 36-4. LW Senior with semi-sym. airfoil, 23 oz. loading, Veco .31, 12/5 prop. RME with Babcock 3-channel. 16.

JACK CURTIS, Fredericksburg, Va., 38-2, LW Trainer. Esc. rudder. 27¼ 2-tube receiver, Aerotrol trans.

HERBERT DAHLGREN, South Bend, Ind., 29-2., Buzz Bugs. Wonderwings Bipe with all-wood lower wing, 14 oz. loading, Arden .199 on 11/4 prop. RM with escapements, C-S 27¼ rec., orig. 5 W. trans.

HAROLD deBOLT, Williamsville, N. Y., 35-2, Flying Bisons. 55" span original with 600 sq. in., K&B .15 with 10/4. RME with Schmidt reed equipment. 7T

CARL DEUTSCH, Woodbridge, N. J., 44-2, Perth Amboy M.A.C. Mod. LW Senior, 21 oz. loading, Fox .25, 10/4. RM with escs. C-S 465 equip.

JOHN K. DIXON, W8IPJ Detroit, Mich., 19-1½, Detroit R/C. Wisp with 45" span, 225 sq. in., 15 oz. loading., Cub .074 with 7/3. Esc. rudder E.C.C. hard tube rec., 25w. orig. trans. on 27 mc.

PHIL D'OSTILLIO, W1TCH, Fairfield, Conn., 31-6, Bridgeport Aeronuts. 5' orig. with 540 sq. in., 17 oz loading, Arden .199 with 9/4. RME with escapements. Two 50 mc channels with own RK61 receivers, own 3A5 transmitters. 5.

GEORGE FADEL, Chectowaga, N. Y., Flying Bisons. LW Trainer. RM with Multi-Servos, C-S 465 mc. equipment.

JOSEPH A. FARRIS, Xenia, O., 30-2, Vapor Trailers. LW plane. Rud. on esc., 27¼ Controlaire rec., own 3 W. trans. with 7A5 tube.

E. H. FLETCHER, Cedar Falls, Iowa, 35-4, Waterloo Prop Twisters. Bootstraps, diesel engine. Proportional rudder with 27¼ 2-tube rec. WAG trans. using CW only

CLAY FREESE, W9EPN, Elmhurst, Ill. Chicagoland R/C Mod. Oversize Rudderbug with 30 oz. loading, Spitfire and 14/6 prop, spark ign. RME with own 6-reed 3-tube receiver. 53 mc. ½ W. trans. 15.

GORDON GABBERT, W5SUI, Dallas, Tex. Rudolph. RME with Babcock 3-chan.

LEO GALINSKI, W9SVE, Chicago, Ill. Chicagoland R/C Mod. 7' orig. with 7 sq. ft area, 26 oz. loading, Spit .64 with 14/6. RME with own 51 mc. reed rec. own 6C4, .65 W. trans. 8.

WALT GEORGE, Wyandotte, Mich. 28-3, Indian City R/C. Buzzer'd. RM with escs., ECE receiver, own 6C4, 4 W. trans. 9T.

J. G. GOKEY, JR., Freeport, Ill. 30-⅓, Flying Tank Circuits. RC-Master with K&B .19, 9/4. Proport. rudder with 2-tube rec.

WALTER A. GOOD, W3NPS, Bethesda, Md., 28-3, DC/RC. Rudderbug with 2-wheel gear, Forster .29. RE with simultaneous proport. control, own 52 mc. 3-tube rec., own 2.5 W trans. Stick control.

TONY GRISH, St. John, Ind., 43-2. LW Cruiser, 13.5 oz. loading, K&B 23 with 11/4. Rudder only with C-S 465 mc. 7T.

ROBERT W. HAHN, Salina, Kans. 29-2. 54" original with 480 sq. in., 11 oz. loading, .09 engine. RM with esc., C-S 465 mc. equip.

WARREN H. HALL, Burlington, N. C., 29-3. L. W. Senior. RME with Schmidt reed equipment

DWIGHT R. HARTMAN, Argenta, Ill., 28-10. High-Q with 16 oz. loading. Cub .14 with 10/4 Esc. rudder, 2-tube rec., ESSCO 5 W. trans.

MAXEY HESTER, Des Moines, Iowa, 29-1, Des Moines Modelairs. Royal Rud. Bug with sheet sides, ED 2.46 diesel, 10/4 prop. Proport rudder with Transitrol 2-tube rec., McEntee 3A4 trans.

DONALD J. HICKMAN, Canton, O., 30-2, Stark Co. R/C. LW Senior. Esc. rudder with C-S 27¼ equipment

DON HOLCOMB, Alma, Kans., 52-5, Wichuhawks. 8' low wing orig. with 1500 sq. in. area 23 oz. wing loading, Vivell Twin on spark. RM with escs., Babcock single-channel equipment.

DELMAR JOHNSON, Chicago, Ill., 22-3, Chicagoland R/C Mod. Rudderbug with 15 oz. loading., Forster .29 on spark, 11/4 prop. Esc. rudder Miller rec., orig. 3Q4 trans, 1¾ W. 26T.

E. PAUL JOHNSON, W0BDW, Des Moines, Iowa, Des Moines Modelairs. 5' original with Mighty Midget engine on spark. Proport. rudder, 50 mc. 3-tube orig. receiver, Good Bros. trans., relay pulser. 19

T A. KELLEY, Huntington, Ind., 29-3. LW with K&B .19 and 10/6. RM with escs., C-S 465 mc

GEORGE KILBEY, JR., South Bend, Ind., 28-1. Jersey Lightning. Esc. rudder, C-S 27¼ equip.

HUBERT B. LACEY, Columbus, O., 40-1. 10' scale Buhl Pup, 12½ sq. ft. area, 18 oz. loading, OK Twin on spark, 18/9. RME with Schmidt reed equipment.

CHESTER C. LANZO, Berea, O., Cleveland Balsa Butchers. 4' span scale SE5 biplane, 800 sq. in., 11½ oz. loading, ED 15 diesel, 12/5. Esc. rudder, Mini-Mac rec., own 2 W. 3A5 trans.

PETE LAVENGOOD, Wabash, Ill., 17-2. Beam with Elfin 15 diesel. Esc. rudder, C-S 27¼ equipment.

JOHN LEMON, JR., Berkley, Mich., 20-3, Detroit R/C. Mod. LW Senior with trike gear, 18 oz. loading, K&B .32. RME, mod. Schmidt reed receiver, Schmidt trans.

ROBERT H. LIEBECK, Wheaton, Ill., 16-½, Wheaton Model Club. Buzzer'd with 16 oz. loading, Fox .19 with 10/4. Esc. rudder with single channel Babcock equip.

DONALD T. LOW, Xenia, O., 29-4,. Good Bros. Gulf. RM with escs., Controlaire rec., mod. AT trans. with 6V6, 4 W. 17.

W. J. MacKERRACHER, San Francisco, Calif., 53-3, Mustangs. 70" span taper wing original, wt. 10 lbs., McCoy .60 with 9/5. RE with Rockwood reed equipment.

FRANK J. MADL, W9ELN, Chicago, Ill., 39-13. Chicagoland R/C. Mod. Custom Cavalier, 9' span, 1300 sq. in., 22 oz. loading. Orwick engine with 14/6. RME and brakes, Rockwood reed equipment on 54 mc. 9T

KENNETH MAKEPEACE, Fidorado, Ark. 30-4. Sterling Tri-Pacer Lorenz rec., orig. 5W trans with 6V6, proport. pulser.

CHARLES R. MAURER, Canton, O., 33-2, Stark Co. R/C. LW Senior with 14 oz. loading, K&B .23 and 11/4. Esc. rudder, No. Amer. 2-tube rec., Mac II trans.

LEONARD McCOY, Lamar, Mo., 24-3. 52" orig with 500 sq. in., 21 oz. loading, Cub .19 with 9/4. RM with escs., Babcock rec., MacDonald trans.

MERRILL McCOY, W0KDG, Des Moines, Iowa, 38-5, Des Moines Modelaires. 64" span orig with 640 sq. in., 17. oz. loading, Arden 19, 11/4. Proport. rudder with mod. Good Bros. rec., 53 mc. Good Bros. trans.

CLAUDE McCULLOUGH, Ottumwa, Iowa, 32-8, Hornets R/C. 60" orig. with 700 sq. in. area, 17 oz. loading, K&B 32, 11/4. RME, proport. rudder, C-S 465 mc. equipment, mech. pulser

FRAN McELWEE, So. Plainfield, N. J., 35-7, Guided Missiles. Flying Saucer, 1½ times AT design, 19½" span, 8 oz. loading, Cub .14 with 9/4. RME with escapements, No. Amer. 2-tube rec., C-S trans., beep box.

G. G. McGEORGE, Highland, Ind., 46-3. LW Senior, esc. rudder, 2-tube Mini-Mac, Mac II trans.

DONALD MUELLER, Wauwayosa, Wis., 28-3. Buzzer'd with O&R .23, 10/3½ prop. Proport, rudder, C-S 27¼ rec., Mac II trans.

HERB PETERSON, Evanston, Ill., 23-1, Chicagoland R/C. Liberty Belle. Proport. rudder, Mini-Mac rec., Aristrol trans.

RUDY PRIKOSOVICH, South Bend, Ill., 23-2, Buzz Bugs. Beam, Esc. rudder with C-S 27¼ rec., own 6C6 4 W. trans.

RAYMOND RAEDEL, Arlington Heights, Ill., 35-1, Chicagoland R/C. LW Senior with 16 oz. loading, K&B .19, 10/6. RM with escs., Super Aerotrol equipment

JIM RATES, W5XTQ, Meridian, Miss., 18-3, Meridian Model Club. Mod. LW. Esc. rudder, ECC rec., Aerotrol trans., beep box.

JAMES V. REED, WN3YTH, Silver Spring, Md., 36-5, DC/RC. 6' span semi-scale L-19 Proport. rudder with Good 3-tube tone rec., own 6AQ5 3W. trans. 23

JAMES A. RUFFIN, Thomaston, Ga., 39-7. 6' span orig. with 32 oz. loading, Spitfire engine and 14/6 prop. RME with special esc., Mini-Mac rec., Mac II trans., beep box.

PAT RYDER, Janesville, Wis., 23-1½, Tri-Nitro-Teers. Bootstraps with McCoy .09 and 8/6 prop. Proport. rudder with No. American 2-tube rec.

KENNETH SATTERLEE, Waterloo, Iowa, 39-4. Beam. RME with escs., No. American 2-tube rec., Mac II trans.

FRANK R. SCHMIDT, W3WF, Erie, Pa., 55-?. LW Senior. RE with Schmidt reed equipment on 50 mc.

CARL SCHMAEDIG, Clark Township, N. J., 36-5, Guided Missiles. Rudderbug with lifting stab, 18 oz. loading, Fox .29, 11/6. RME with Babcock 3-channel equip.

MERWIN A. SCHNEIDER, San Francisco, Calif., 39-5, Pacific R/C Soc. Mod. scale 7' Piper Cub, 1050 sq. in. area, 18 oz. loading, Spitfire .60 on spark, 14/6. RME with Rockwood reed equipment. 1.

CHARLES R. SCOTT, New Castle, Del., 27-1, Wilmington R/C Sky Blazers. Mod. Liberty Belle with .09 engine. Esc. rudder, C-S rec., own 3A5 2 W. trans.

CHARLES H. SIEGFRIED, W0SU, Wichita, Kans., 52-18. LW Senior. RME with two RK61 receivers on 50 mc band, 35 W trans.

EDWARD A. SIEH, Cedar Rapids, Iowa, 25-1, Hawkeye Aeroneers. Orig. delta with shrouded prop, 42" span, 764 sq. in. area, 9 oz. loading, K&B .15. Esc. rudder with Good AF tone trans. and rec.

CHARLES SPEAR, Painted Post, N. Y., 31-2, Flying Sparks. Liberty Belle, Space Bug Jr. with 6/3, Esc. rudder, Lorenz rec., ECC trans.

PAUL STEFANKO Waterloo, Iowa, 35-1, Flying Aces. Beefed-up Beam, McCoy .09 with 9/4. Esc. rudder, No. Amer. 2-tube rec., Mac II trans 10.

GEORGE STEINBRICKER, Detroit, Mich., 42-4, Detroit R/C. LW Cruiser. RME with Babcock 3 channel equip. 13.

WILLIAM A. STELMACH, Menlo Park, Calif, 42-4, Pacific R/C Assoc. Enlarged TD Coupe, 7' span, 10½ lbs. Spitfire eng. with spark. RME with Rockwood reed equip. 6.

GEORGE B. SWANK, Buffalo, N. Y., 36-3, Flying Bisons. Super Buccaneer with trike gear, Spitfire and 14/6 prop. RME with Schmidt equip. 3.

KEN TAYLOR, Detroit, Mich., 28-2, Detroit R/C. Scientific Mercury. RE with Babcock 3-channel equip. 22.

THOMAS DUANE, Cedar Falls, Iowa, 26-2, Waterloo Prop Twisters. Tri-Pacer with K&B .15, 10/3½. Elev. only, on esc.; No. Amer. rec., Mac II trans., Beep box.

HENRY THOMAS, AKRON, O., 36-2. Mod Rudderbug with 13½ oz. loading, DeLong .30, 12/4. Rudder only with Multi-servo, No. Amer. rec.

BILL UNDERKOFLER, Ames, Iowa, 17-3. Robot Rudder on esc. with own receiver; 3A4 trans. with 2 V. supply.

ELMER C. WASMAN, Jacksonville, Fla., 45-17. Impulse. Rudder only. Lorenz rec.

BILL WEAVER, Wichita, Kans., 27-?, Wichihawks. Mod. LW Trainer with trike gear, 15 oz. loading, K&B .19, 10/6. RM with escs., 2-tube rec., E.D. trans.

RAYMOND WESTLAND, Minneapolis, Minn., 39-2, Minn. Hot Watts. Royal Rud Bug. Rudder only with E.D. rec., orig. 5 W. trans. with two 3A4's.

BILLY T. WHITE, Lexington, Ky., 22-6, Aero Knights. Beam with rounded fuse. bottom, 20 oz. loading, K&B .15, 8/6. Proport. rudder, C-S receiver, own 4.8 W. trans.

JACK WILLIAMS, Ottumwa, Iowa, 35-5, Hornets R/C. 65" span orig., 682 sq. in., 20 oz. loading, K&B .32 with 11/4 prop. RME; proport. rudder. C-S 465 mc. equip.

W. P. WOODALL, Thomaston, Ga., 39-7 LW Senior. RME with special escapement. Simple Single rec., Mac II trans., beep box.

MAURICE G. WOODS, Oklahoma City, Okla., 27-6, Okla. City R/C. LW Senior with trike gear, 18 oz. loading, .29 engine. RME with Babcock 3-channel equip.

# R/C Control at 1954 "Nats"

(*Continued from page* 38)

With all this tale of woe, readers may wonder if there was any flying at all. There sure was, and it was of high caliber. Proof of this is seen in the fact that first-place man Alex Schneider ended up with 183 points. He was flying the big 7 ft. semi-scale cabin type of plane that is so popular in Northern California, as was sixth placer Stelmach and several others of the California delegation. These big planes are really majestic in action, but Alex proved they can be tossed around, too; he did the prettiest upside-down flying we have seen to date.

In contrast to Schneider's big ship, second-placer Howard Bonner flew a hot little Beam, which was so violent in action that some of the onlookers named it "Twitchy."

This was a big year for multi-controls, in contrast to 1953 when the winner and several other top-placers were flying with rudder-only. At Chicago, only two of the top ten used just rudder, and the highest place with such equipment was taken by Tony Grish in seventh.

It seems that the time is here at last when some sort of "classes" will have to be set up for rudder-only, and for multi-controls, and the new rules will undoubtedly include such a split. Figuring rudder and motor as single control, Director Kratzet points out that 31% of the 129 flyers who were processed had multi-control, and if you take the top 36 placers—55% were multi's! But in case you think there is nothing to this multi-control stuff but attaching an elevator to your plane, better check first with one of the members of the "Down-Elevator Club." It's not known how many members attended the Nats (and several new ones were made during the meet!), but membership is open to all those who have piled-in their planes with the elevator stuck in down. . . .

There were some comments to the effect that flying was not so hot this year, but we feel this might have been due to the large number who flew—or tried to. You had to keep your eyes aloft constantly to catch the really good flights among the many that were just so-so. And this brings up another point—the large number of flights, or attempts at same, during which the plane never got started, refused to take off, or piled up soon thereafter.

One thing that did disappoint us was the comparative lack of original design planes. Not that we have anything against kit jobs or those made from magazine plans, but it is interesting to see how the originals stack up against the proven designs. It came to us that there may have been relatively few of the former because so many flyers had been concentrating on equipment problems—getting all those multi-controls in their planes and operating properly. Not only were there quite a few of the commercial multi-control systems in use, but an interesting number of home-grown systems as well. Sad to say, some of the most promising of these showed bugs and did not come up to expectations, but we predict more will be heard from a number of them at some future date.

Just to mention a very few of the new systems seen, Howard Bonner was using a two-channel AF setup, in which the audio tones were separated by means of *tuned sensitive relays*. Colby Evett had several receivers for multi-tone use, all of them working on different principles; we are not sure which one he employed to climb to fourth place, but believe the receiver in use had three channels with special tiny toroid filter chokes. Bill Woodall had several most ingenious spring-driven beep boxes, which enabled him to select his various controls at will. And Walt Good had a brand-new dual proportional control set-up—using the same general type of receiver and transmitter that were described in ATH last spring—which provided simultaneous control of rudder and elevator, plus a fail-safe arrangement on both surfaces. There appeared to be more proportional control equipment in use this year, and as usual the Iowa delegation was practically 100% proportional.

We don't know how many states were represented in R/C, but of the 29 flyers in top place, five were from California, five each from Detroit and Chicago, three from Iowa, two from Buffalo, with the others widely scattered.

Of course, by far the largest number of planes were on 27¼ mc., with about equal numbers on 50 and 465 mc. The 50 and 465 men flew in one group, and combined, they totaled far less than those on 27¼; this might have been considered to give them a certain advantage, since they were probably able to get in all the flights they wished, while the 27 group were sweating out the ready-line. In fact, at the R/C contestants' meeting held Wednesday evening, a small group of flyers (who were on 27¼, needless to say) put in a strong bid to limit the 50 and 465 flyers one way or another, so that they wouldn't be able to fly any more often than those on 27¼. At the time this seemed to us a very short-sighted policy and it still does; many modelers have taken the necessary steps to get away from 27¼ mc., mainly so they will have some chance of flying when the field is crowded. Let's encourage others to do this—not penalize those who do.

While we have noted that most of the planes were quite orthodox, there were some exceptions, of course. New to most of us this year was fourth-place man Colby Evett's hot shoulder-winger, known to many on the Coast as "Big Mo" (the Flying Dreadnaught!). Paul Johnson started out with a close scale copy of a Monocoupe, but it dove into the concrete vertically, directly after take-off; since this crash was considered almost certainly to have been caused by interference, Paul was allowed to try again with one of his original-design jobs, which has a flat wing with very sharply upturned tips.

Claude McCullough, as usual, came up with something new; the plane itself was a fairly modest design (for Mac!), with a sort of guppy-shaped fuselage. Most interesting external feature was the double-wheeled landing gear. The ship had the normal two-wheel gear, but two extra spring-loaded wheels had been added, which tracked directly behind the main wheels; object was to get good R.O.G. qualities and the design paid off, for the ship went down the runway as though on rails.

As is the case at every meet, some of the most unusual planes didn't score well, weren't actually brought out for competition flying, or didn't fly at all. In the first category would come Fran McElwee's Flying Saucer; this is an exact 1½ times blow-up of Roy Clough's Saucer that appeared in Air Trails, and Mac had it equipped with RME

Another most unusual plane was a delta with shrouded prop, the work of Edward Sieh; several evening flights were made with this plane, which seemed to be very stable. It has no landing gear—just a skid—and Ed had to practically fly himself, to get it into the air.

One of the most beautiful models—R/C or otherwise—that we have ever seen was the exact scale 10 ft. span Buhl Bull Pup. Probably most of the newcomers will not remember this snappy little single-seat prewar sport plane, but builder Hubert Lacey certainly brought back memories to a lot of the oldtimers. The plane was equipped with RME, but was not flown at Glenview, though it has been in the air under radio control at Lacey's home. The finish was just out of this world, the fuselage having a better gloss than many autos!

There were a few biplanes on hand, though they did not win any top contest honors, unfortunately. We saw a copy of Cal Smith's "Wonderwings," and another that brought back memories was an exact scale SE5.

We can't close this report without a word of appreciation to the hard-working officials who conducted R/C—Director Ernie Kratzet, his cohort Red Hillegas, their lady score-keepers, Mrs. Kratzet and Mrs. Branstner—who toiled most of the first two days in the scorching sun—and the Navy judges, who did likewise, but were maybe more used to it. All had their hands full, running the biggest R/C meet ever conducted.

And that brings up something else—it has seemed for several years, and never more so than in 1954, that the R/C event just doesn't receive the consideration it deserves from those conducting the meet, be they part of the AMA, the Navy or the Exchange Club. Not that the R/C gang wants or should have the plush carpet treatment; but the total of "equipment" that was given the R/C officials was a few stop watches and penny balloons! All other equipment had to be scrounged around the Base or obtained in Chicago, and this included the vital PA system. And to top it all off, these R/C boys came to the Nats with their thousands of dollars worth of equipment to compete for just three little trophies—a third as many as given for Indoor Hand-launched Gliders!* Is it any wonder that we heard considerable talk of conducting future R/C Nationals Events on our own, and entirely apart from any other model flying events?

*—Howard G. McEntee*

(*Ed. note—Air Trails Hobbies put up nine trophies for R/C—three in each age class, but somehow officials did not award them. Anybody seen our 6 missing trophies?)

# INTERNATIONAL MEETS

## *Rubber Power Wakefield F. A. I. Free Flight "Gas"*

How's this for a beautiful free flight site? Suffolk Co., N. Y., Air Force Base was location of Wakefield & F.A.I. Championships.

Swedish entry (left) by Rolf Hagen in gas event flown by Mr. Hakansson to 9th place with 10:01 total. Ed Naudzius (right), Detroit, proxy-flies Wakefield by Don Wilson, New Zealand (15th).

**Aeromodeling's 2 top events combined last season to produce Model Olympics of the Air. Sponsor: Convair. Host: USAF**

■ The United States won three out of four major events to take top honors in the first World Model Air Olympics staged last season at Suffolk County Air Force Base on Long Island, N.Y. The lone foreign victory was scored by Australia when Alan King of Victoria defeated entries from 8 other nations to win the historic Wakefield Cup for rubber-powered model planes.

Americans won team titles in the Wakefield and also in the F.A.I. (Federation Aeronautique Internationale) engine-powered contest, and a member of the U.S. team, Carl R. Wheeley of Washington, D.C., took the individual championship in free flight.

The famous Franjo Kluz Cup, emblematic of the world supremacy for engine-powered endurance models, was awarded to the U.S. power team. This trophy was donated by the Aero Club of Yugoslavia. The F.N.A. Cup, donated by the Aero Club of France, went to the American Wakefield team. Twelve nations were represented at the Model Air Olympics with more than 50 individual contestants on hand from all six continents. The competition was sponsored by Convair Division of General Dynamics Corp; the U.S. Air Force served as official host.

The winner! Alan King (left), flying for Australia, scored five perfect 3-minute flights to capture Lord Wakefield trophy. Eduardo Benavidez of Argentinian team placed 21st with 11:20 total time.

At left: Entry by Upson of Great Britain in F.A.I. readied by Call and Parmenter, U.S. (14th). Center: Fabi Mursep, Argentina (8th) in Wakefield. Right: Cesar Altamirano of Argentina with Wakefield entry. His team placed 5th in Wakefield event, 2nd in gas contest.

**American Entrants Capture Both Top-Team Trophies**

■ Winning United States team enjoys complimentary remarks offered by Air Force Colonel Jack Bradley as the Air Defense wing commander presents the F.N.A. team trophy at the Awards Dinner. This highly coveted group prize is given for the rubber-powered Wakefield event. Team members who amassed a total of 2,404 points were (from left) Robert DeBatty of Oaklawn, Ill. (738 pts.); Robert Dunham of Tulsa, Okla. (835); Warren Gillespie, Jr., of Hampton, Va. (771); and Richard Baxter of LaMesa, Calif. (798). At left side of table is the well-known cup donated by the late Lord Wakefield of Hythe; at the right can be seen the fabulous Franjo Kluz trophy which is awarded to the top performing group in F.A.I. power flying. This team prize also went to the U.S.A. for the 2,204 point total racked up by gas modelers Carl Wheeley, Dave Kneeland, John Tatone and Ray Lagermeier.

Top proxy performer in '54 Wakefield was Carl Hermes (above, left) of U.S. who flew Charles Jackson's model to 2nd for Great Britain.

Familiar sight around the world (right) of aeromodeling: timers put the clock on an official flight as contestants watch at rear.

After getting off to a bad start and missing out completely on his first two tries, U.S.A.'s Ray Lagermeier made 3 perfect flights.

Argentina team member Oscar Lastra checks out his conventional, clean free flight. He used single wheel and sub-rudder skids.

Take one good model (left), ship it across the Atlantic Ocean, give it to a proxy flyer by name of Hermes and here's the result!

Canada's Donald MacKenzie assumes a prayerful, hands-off stance as he launches his rubber-powered entry. Don's total: 675 seconds.

### Here's the Storey: A King and a Queen

■ Australia's lone entrant in the Lord Wakefield competition, Alan King (center) is crowned "king" of all international rubber powered model flying with the awarding of the famous old blue ribbon cup. Five perfect flights of 3 minutes each brought him the prized trophy. Standing at left is Keith H. Storey of Pasadena, Calif., president of the Academy of Model Aeronautics and a famous control line speed and team race flyer. Representing women in aviation as "Miss Air Olympics" was Joan Nelson of Sea Cliff, L. I., an airlines stewardess. Scene of presentation was the Henry Perkins Hotel, Riverhead, L. I., following the conclusion of the two-day Convair-sponsored Model Air Olympics. King, aged 26, was three times Australian National Champ, is an industrial chemist. With a 5th place in the F.A.I. Gas event he very nearly became the first individual to score a double win.

## 1954 WAKEFIELD RESULTS

| PLACE | CONTESTANT, NATIONALITY (PROXY) | FLIGHTS IN SEC. | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| 1. | Alan King, Australia | 180 | 180 | 180 | 180 | 180 | 900 |
| 2. | Charles Jackson, Gt. Brit. (Carl Hermes) | 146 | 180 | 180 | 180 | 180 | 866 |
| 3. | Allan Lim Joon, Australia (Manuel Andrade) | 180 | 143 | 180 | 180 | 180 | 863 |
| 4. | John Upton, New Zealand (George Reich) | 180 | 180 | 180 | 124 | 180 | 844 |
| 5. | Bob Dunham, U.S.A. | 120 | 175 | 180 | 180 | 180 | 835 |
| 6. | Arne Blomgren, Sweden | 180 | 146 | 180 | 128 | 180 | 814 |
| 7 | Philip Joyce, Canada | 180 | 180 | 146 | 180 | 175 | 806 |
| 8. | Fabi Muraco, Argentina | 152 | 169 | 120 | 180 | 180 | 801 |
| 9. | Dick Baxter U.S.A. | 180 | 180 | 177 | 180 | 93 | 790 |
| 10. | Warren Gillespie, U.S.A. | 128 | 138 | 180 | 180 | 150 | 771 |
| 11. | William Rockell, Gt. Brit. (Dick Quermann) | 103 | 152 | 154 | 180 | 180 | 769 |
| 12. | Cyril Mayes, Canada | 180 | 180 | 141 | 79 | 180 | 760 |
| 13. | Sergio Rante, Canada | 102 | 180 | 180 | 114 | 180 | 756 |
| 14. | Anders Hakansson, Sweden | 118 | 180 | 147 | 180 | 126 | 751 |
| 15. | Donald Wilson, New Zealand (Edward J. Nawdzius) | 107 | 138 | 98 | 168 | 180 | 745 |
| 16. | Robert DeBolt, U.S.A. | 123 | 161 | 111 | 180 | 165 | 735 |
| 17. | Alfred Leong, New Zealand (Bob Hatschek) | 107 | 180 | 84 | 180 | 180 | 731 |
| 18. | Andy Bobkowski, Guatemala | 112 | 101 | 131 | 180 | 180 | 704 |
| 19. | Hugo O'Donnell, Gt. Brit. (C. N. Montpelaisir) | 171 | 180 | 168 | 180 | ... | 699 |
| 20. | Cesar Altamirano, Argentina | 157 | 180 | 180 | ... | 180 | 697 |
| 21. | Eduaro Benavidez, Argentina | 140 | 180 | 180 | 180 | ... | 680 |
| 22. | Donald MacKenzie, Canada | 154 | 95 | 229 | 117 | 180 | 675 |
| 23. | Vic Dubery, Gt. Brit. (Jerry Kelly) | 128 | 157 | 180 | 95 | 73 | 633 |
| 24. | Jose Pardo, Guatemala (L. Vargo) | 42 | 53 | 180 | 142 | 180 | 597 |
| 25. | Kiyotatsu Miyoshi, Japan | 28 | 25 | 180 | 116 | 180 | 529 |
| 26. | Ernesto Colombo, Argentina | 77 | 70 | 189 | 88 | ... | 415 |
| 27. | F. A. Macauley, New Zealand (Stan Colson) | 51 | ... | 156 | 48 | ... | 249 |
| 28. | Oswaldo V. Pellecer, Guatemala (Lee Renaud) | ... | ... | 34 | ... | 180 | 214 |

### Team Results

| | | | |
|---|---|---|---|
| U.S.A. | 2804 | Australia | 1763 |
| Great Britain | 2334 | Sweden | 1585 |
| Canada | 2322 | Guatemala | 1511 |
| New Zealand | 2329 | Japan | 529 |
| Argentina | 2178 | | |

Dick Quermann of U.S.A. with Great Britain model built by William Rockell. This Rockell-Quermann proxy team ended in 11th place.

Manuel Andrade of U.S.A., proxy for Allan Lim Joon, Australia, gets Wakefield model off to fine flight. Joon-Andrade placed 3rd.

## 1954 FAI RESULTS

| PLACE | CONTESTANT, NATIONALITY (PROXY) | FLIGHTS IN SEC. | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| 1. | Carl Wheeley, U.S.A. | 180 | 135 | 180 | 180 | 169 | 844 |
| 2. | Silvio Lanfranchi, Switzerland | 180 | 118 | 180 | 173 | 180 | 831 |
| 3 | Dave Kneeland, U.S.A. | 180 | 180 | 142 | 180 | 101 | 783 |
| 4 | John Gorham, Gt. Brit. (Bill Dean) | 180 | 180 | 119 | 180 | 64 | 723 |
| 5. | Alan King, Australia | 180 | 92 | 148 | 68 | 180 | 650 |
| 6. | Francisco Steyer Argentina | 112 | 92 | 180 | 136 | 107 | 629 |
| 7 | Bill Etherington Canada | 180 | 180 | 88 | ... | 180 | 628 |
| 8. | Jose Meduri, Argentina | 47 | 151 | 180 | 94 | 130 | 602 |
| 9. | Rolf Hagel, Sweden (Anders Hakansson) | 113 | 180 | 48 | 80 | 180 | 601 |
| 10. | Oscar Lastra Argentina | 62 | 72 | 101 | 180 | 180 | 595 |
| 11. | John Tatone U.S.A. | 102 | 180 | ... | 115 | 180 | 577 |
| 12. | Ray Lagermeier, U.S.A. | ... | ... | 180 | 180 | 180 | 540 |
| 13. | Keith Sousfield, Canada | 180 | 180 | . | 26 | 65 | 451 |
| 14. | George Upson, Gt. Brit. (Frank Parmenter) | 105 | ... | ... | 125 | 180 | 410 |
| 15. | Julio Quevedo, Guatemala | 76 | 112 | 57 | 126 | 34 | 405 |
| 16. | Federico Hillcoat, Argentina | 34 | 54 | 69 | 68 | 169 | 394 |
| 17 | Bob Mackenzie Canada | 51 | 33 | 180 | 51 | 75 | 390 |
| 18. | Carlos DeCosio, Mexico | 88 | 180 | ... | ... | ... | 268 |
| 19. | James Graves, Canada | ... | 86 | ... | 69 | 94 | 243 |
| 20. | Roe Moulton, Gt. Brit. (Joe Elgin) | 120 | ... | 48 | ... | ... | 168 |
| 21. | Pete Buskell, Gt. Brit. (Fran Hager) | ... | ... | ... | ... | ... | ... |

### Team Placing

| | | | |
|---|---|---|---|
| 1. United States | 2294 | 6. Australia | 650 |
| 2. Argentina | 1825 | 7. Sweden | 601 |
| 3. Canada | 1712 | 8. Guatemala | 405 |
| 4. Great Britain | 1301 | 9. Mexico | 268 |
| 5. Switzerland | 831 | | |

Among the celebrities (from left): Thomas Lanphier, Jr., president National Aeronautic Assoc. (and V.P. of Convair, the Model Olympics sponsor); Lt. Gen. James H. Doolittle, USAF (Ret.); Queen of the Meet, Joan Nelson with Frank Lashek's F-92 Dyna-Jet control scale (from last year's AT Annual); and Keith Storey, president, A.M.A.

# ANALYSES of National Meet Winners

**Through the cooperation of America's top-place contest winners you have here the most detailed listing ever presented by ATMA**

Because of the wealth of material it has been necessary to abbreviate wherever possible. Under "age & place" the junior class is designated "J"; seniors are "S"; and the over-21 are "O" for open. First place is marked "1", second place "2" and third "3". Thus "S2" means senior class second place. Under "data" the following applies: "W" means wing and followed by numbers means "span" and "area" —thus W:9-11 means 9" span, 11 sq. in. area. "S" is stabilizer followed by area in sq. in. "Bo" is body (fuselage) followed by length in inches. "F"—fuel; "PL"—plug; "R"—rudder followed by area in sq. in.; "Ba"—battery; "Pr"—prop—6/4 means 6" diameter, 4" pitch; "C" preceded by numeral (example, 4C) means (four) coats of specified dope; "H"—control handle; "HL"—handlaunched; F/F—free flight; "symm"—symmetrical; "ply"—plywood; "l.g."—landing gear; "min"—minute; "deg"—degree. "Rt-rt pattern" means climbs to right, glides to right, etc.

## U. S. MODEL AERO CHAMPIONSHIPS OF 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Half-A Speed | J1 | Martin Maciag, Jr<br>Matawan, N.J. | 72.43 | • Mk 1 "Ole Fateful" W:9-11, flat bottom airfoil. S streamline 5.25. 3 oz Bo:9, hardwood crutch & balsa. Thermal Hopper beam mounted F:O&R Hellzfyre; Pl:Thermal Hopper, Ba.Sears; Pr:4.5/6 Power. HL. 4C Aero Gloss, 1C filler. H Super handle; 5 pc. hard balsa, plywood W&S. |
| | J2 | Ron Brick<br>Cleveland | 65.14 | |
| | J3 | Mike Dawson<br>Galesburg, Ill | 61.62 | • Hell Razor without cowl, smaller W&S. Silk covered, 5C Aero Gloss. Thermal Hopper. F.Thimble Drone; Pl:Cox Hotspot, Ba.Burgess batteries, Pr Tornado 5/7 HL. |
| | S1 | Walter Vrablic<br>Perth Amboy, N.J | 85.60 | • Two-time Nationals, 3 time Mirror Meet winner. W 8.75-12, Clark Y airfoil; S:flat 5, Bo:9. 2.75 oz Cox .049, F O&R Hellzfyre, Pl:Cox, Ba Burgess, Pr Grish 5/7 4C Aero Gloss. |
| | S2 | Mike Crabb, Jr<br>Memphis | 72.32 | • Half-wing, half-stab orlginal W.4 75-8.3; symm. section at 0 deg S 3 75, symm BO:7-½" basswood. Atwood Signature .049; Pl Atwood, F Thimble Drome racing, Ba:Ray-O-Vac Pr:4.5/6 Power. No down thrust, 1 deg. right thrust. 3C Aero Gloss |
| | S3 | Donald Schmitz<br>Elizabeth, N.J. | 71.51 | • W·9-12 Clark Y balsa S 6, Clark Y plywood, 3 oz No rudder. Bo·8 pine. Thermal Hopper; F:Hellzfyre; Pl:Thermal Hopper, Ba:Bright Star; Pr·4.5/6 Power H E-Z Just Hot Rock. 5C Testor |
| | O1 | Warren Kurth<br>Bloomington, Ill. | 80.61 | • Design holds Sr. A/2 Speed record 85.76 mph. W.9.5-16; symm. S:4; symm 2.5 oz. W&S 1/16" balsa & silk laminations. Bo·9, hollowed block Thermal Hopper; F Thimble Drone racing; Pl:Cox; Pr·Tornado 5/7. HL. 5C Dulux. |
| | O2 | William McGraw<br>Memphis | 79.83 | • Pod and boom construction with Wasp F/F tank. Balances ¾" ahead of W·8 1/16-10 Clark Y. 2 oz (with motor) S 3.25 Bo:6 1/16 pod. Atwood Cadet, F:Thimble-Drome; Pl·Atwood; Pr. 4.5/6 Power. HL. 7C STA. |
| | O3 | Thomas Baker<br>Kings Mtn , N.C. | 78.03 | • A/2 "Squeaker", W:9/25-16 18 semi-symm S:5.76 symm. 3.5 oz Bo.8 75 balsa with 1/32" plywood crutch R·1 35. All settings at 0 deg CG 5%. Metal W. plywood S. Thermal Hopper "cleaned up", F.Cheminol; Pl.Thermal Hopper; Pr:Tornado 5/6 2 pin. 3 wheel dolly 5C Butyrate. |
| Speed—Cl. A | J1 | Robert Giles<br>Irvington, N.J. | 122.90 | • W:13 symm. pine. S. symm plywood 10.25 oz. Bo pine. Torp 19; F:Hellzfyre; Pl:O&R; Pr: Tornado 6/10; H:Hot Rock. HL. 4C clear Aero Gloss. |
| | J2 | Martin Maciag, Jr.<br>Matawan, N.J | 116.53 | • Mk. 2 "Ole Fateful", W.13.5-24 flat bottom S:11.5 streamline Bo.14 5 magnesium pan-top crutch-tear drop cowl 5-piece hard balsa & plywood W&S 13 oz K&B Torp .19, F·S S. 1000 & Hellzfyre (50/50); Pl:"OK" Short, Ba· Sears; Pr·Tornado 7/9; H·Super HL. 5C Aero Gloss, 2C balsa filler. |
| | J3 | Thomas Tomoser<br>Kenmore, N.Y. | 113.02 | • W 13.25 maple spar wrapped aluminum modified Clark Y S symm 10.875. Bo:13.25 pine top, original "pan-frame" 14 oz Torp .19, F.original, Pl:"OK", Ba Willard; Pr Tornado 6/10; H:E-Z Just Hot Rock. HL. 15C Aero Gloss. |
| | S1 | Walter Vrablic<br>Perth Amboy, N.J. | 126.71 | • W·11-20 Clark Y, S:8 flat 10.5 oz Bo·13 magnesium bottom, spruce top Torp .19; F Hellzfyre plus other; Pl:O&R short, Ba. Burgess; Pr.Grish 6/10 HL 5C Aero Gloss. |
| | S2 | Walton Pyron<br>Decatur, Ga. | 123.41 | • Same plane set Jr record at '53 Nats. W:12-24, nearly symm , solid balsa S:11 symm. 1/16" plywood. 12 oz. Bo.12 carved balsa Torp 19. F.original; Pl Kwik-Start; Pr:Tornado 6/10, H Model-Aire. 3 wheel pin dolly. Silkspan covered. 9C Aero Gloss |
| | S3 | Robert Chojnack<br>Perth Amboy, N.J. | 122.90 | |
| | O1 | Thomas Baker<br>Kings Mtn , N.C. | 130.19 | • Cl. A "Squeaker" W:12.5-28.12 semi-symm metal. S:9.10 symm. plywood. Bo 13.25 balsa, 1/32" plywood crutch R 2.75 12 oz All settings 0 deg. CG at chord Torpedo 19 "cleaned up and freed up"; F:original, Pl O&R; Pr:Tornado 6/10. 2 pin, 3 wheel dolly 8C butyrate Silk covered. |
| | O2 | A/2C Dale Kirn<br>Brooks AFB, Tex. | 124.26 | • Monoline design on single .016 line W·15-23 Clark Y No R Cl A Clem pan Bo with hollowed-out Lindenholtz (German) wood. S.3/32" plywood W·Lindenholtz 15 oz CG 20%. W&S at 0 deg Torp .019 with McCoy right angle jet, Dooling needle valve. F:S.S. 1000; Pl:Spitfire; Pr:Tornado 6/10. Mousetrap dolly. 4C clear STA. |
| | O3 | Alfred Stegens<br>Cleveland | 123.75 | • Torp .19; F:original; Pl:Champion; Ba:wet cell; Pr: Tornado 6/10, H E-Z Just Handle. HL. |
| Speed—Cl. B | J1 | Clifton Medlock<br>Atlanta | 126.80 | • W:14-27.8 solid S 6.25 Bo·12 carved top, metal half-pan 12 5 oz Wing at 3 deg, stab 0 deg. Dooling .29, F:original, Pl·Hot Point, Ba·Burgess, Pr Tornado 7/9. Pin dolly 7C Aero Gloss |
| | J2 | Ronald Scott<br>Ft Worth | 123.49 | • Dooling .29 with chrome sleeve; F:Hellzfyre, Pl:Kwik-Start, Pr·Grish 7/9 Mouse-trap dolly |
| | J3 | Mike O'Bryan<br>Detroit | 123.49 | • W:14.5-29 Clark Y. 15 oz Bo·12.5 pine-magnesium W&S solid pine CG 15%. Dooling .29; F.original; Pl.Champion; Ba Burgess; Pr.Tornado 7/9, H Darwin. Locking type dolly. 6C butyrate 2 deg. right thrust |
| | S1 | Ken Hale<br>Dallas | 131.43 | • W:18-31 symm solid, S 10 33 symm solid 16 oz. R.3. Bo·hollowed Dooling .29, Pl:Cheminol; F·Farbins; Ba Burgess; Pr:K.B Plasticoat 7/9, H EZ Just Dolly take off 4C enamel CG 1/3. |
| | S2 | Walter Vrablic<br>Perth Amboy, N.J | 131.24 | • W.15.5-30 solid Clark Y. S:10 flat solid 14.5 oz. Bo·15 magnesium bottom, spruce top. Dooling .29, F Star Dust H, Pl Champion VG 2; Ba.Burgess, Pr:Grish 7/10 HL 5C Aero Gloss. |
| | S3 | Joe Jones<br>Gadsden, Ala. | 131.14 | • Super Whirlaway kit, metal pan Dooling .29, slightly sleeve ported, F.original; Pl Champion plug; Pr:Tornado 7/9. Pin-lock dolly. Silk covered, 7C Aero Gloss. |
| | O1 | Robert Elliott<br>Atlanta | 136.93 | • Monoline design on single .018 wire W·17 5-30%, hard balsa Stanzel Monoline. S·11.5, R 5. 15.5 oz. Bo·14. All settings at 0. Dooling 29 with chrome line, reworked backplate. F:original; Pl Hot Point (L); Pr·Tornado 7/9. Pin-type dolly H:Monoline. Silk covered. 10C clear Aero Gloss. |
| | O2 | Thomas Baker<br>Kings Mtn , N.C. | 136.86 | • Cl. B. "Squeaker." W.14 75-36 87 semi-symm. metal S.15 75 symm. plywood. R 3 13 oz. All settings 0 deg. CG 5%, Bo:14 balsa, 1/32" ply crutch. McCoy 29 with longer venturi "cleaned up and freed up", F.original; Pl.Duramatic, Pr:Tornado 7 10. 2 pin, 3 wheel dolly. Silk covered. 8C Butyrate. |
| | O3 | Raymond White<br>E. St. Louis, Ill. | 133.87 | • W.12-24 solid symm S.10, 3/32" ply R·2. 14 oz Bo·12 magnesium bottom, pine top. CG leading edge mean chord R in 2 deg ; all other settings 0 deg Dooling .29 with enlarged venturi, Pl:Ohlsson racing; F:20% castor, 40% nitro methane, 40% Methanol; Ba: Everready; Pr.Tornado 7/10. Trigger dolly Dulux finish. |

# Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Speed—Class C | J1 | Robert Giles Irvington, N.J. | 143.14 | • W 18 semi-symm. pine S-symm. ply 28 oz Bo bass. McCoy 60, F:Hellzfyre. Pl O&R, Pr. Tornado 9/12. HL. 9C Aero Gloss. |
| | J2 | Martin Maciag, Jr. Matawan, N.J. | 142.57 | • Mk II "Ole Fateful" design. W 19-47 flat bottom S 23 streamline 27 oz. Bo 19 magnesium top crutch, tear drop cowl 5 pc hard balsa-ply W&S. McCoy 60 F Star Dust H, Pl. O&R Quik Start, Ba Sears; Pr Tornado 9/12, H Super. 3C Aero Gloss, 2C Aero Gloss filler, 1C Testor Butyrate |
| | J3 | Clifton Medlock Atlanta | 142.12 | • W 17-51 S 8 4. W&S solid Bo·14 carved top full bottom metal pan 27 oz. Silkspan covered. 7C Aero Gloss. McCoy 60, F·original, Pl Champion VG2, Ba Burgess, Pr Tornado 9/12. Pin dolly. |
| | S1 | Ken Hale Dallas | 152.22 | • W 20-40 S 13.3 symm. Bo 16 hollowed. W&S solid 29 oz R 4 set left W&S at 0 deg 4C enamel. McCoy 60, F Forbins, Pl Cheminol, Ba Burgess, Pr Tornado 9, 12, H E-Z Just Dolly takeoff. |
| | S2 | Bob McConnell Atlanta | 151.71 | • McCoy 60, F original, Pl Champion, Ba Burgess; Pr Tornado 9/12; H Model Aire. 3 wheel pin dolly Bypass, ports modified Silk covered 6C Aero Gloss |
| | S3 | Walter Vrablic Perth Amboy, N.J. | 149.44 | • W 18-45 Clark Y solid S 18 flat solid 26 oz Bo 18 spruce top, magnesium bottom Silk covered 6C Aero Gloss McCoy 60, F Star Dust H, Pl Champion VG2, Ba Burgess, Pr Power 9/12 HL. |
| | O1 | Randall Cullin Trenton, Mich. | 159.51 | • W 16.5 lifting solid pine S 16 flat ply Bo·18 25 pine top, magnesium pan, ply cowl. W&S at 0 deg 27.5 oz 6C Aero Gloss Balances at leading edge. McCoy 60 with ports opened, front plate freed; F:Star Dust H;Pr:Rev-Up 9/11; H·Model Aire, 3 wheel dolly. |
| | O2 | J. A. Stebbins Keesler AFB, Miss. | 159.09 | |
| | O3 | Robert Elliott Atlanta | 157.69 | • W·16-40 pine Stanzel Mono-Line S 16 R:8 All settings at 0 deg Bo·18. 30 oz Silk covered 10C Aero Gloss McCoy 60 with polished rotor, F.original, Pl Champion VG-2, Pr:Tornado 9/12. Pin type dolly. Single .024 Mono-Line control |
| Jet-Speed | J1 | Mike Dawson Galesburg, Ill | 143.25 | • "Spook" design with cylinder tank W 18-59.2 semi-symm 1/16" sheet balsa planking S·24.75 Clark Y ⅛" sheet balsa 27 oz Bo 24.5 built up 'V" dihedral ¼" at each wing tip No R All settings at 0 deg CG 33% Silk covered. 5C Aero Gloss F.white gas, Ba Burgess, H:E-Z Just 4 wheel dolly |
| | J2 | Arthur Pawloski Detroit | 140.35 | • Same design as S3 Dyna-Jet. F white gas, H metal Speed Craft. |
| | S1 | Gerry Blake Dearborn, Mich | 151.33 | • W 16-56 Clark Y aluminum S 20 flat aluminum. No R 1" dihedral 32 oz Bo 26 cast aluminum 2 deg neg W incidence, 0 deg S CG 33% Dyna-Jet, F white gas H Modelaire 4 wheel dolly. |
| | S2 | Piper Mason Jr Russellville, Ky. | 148.21 | • W 16-38.78 semi symm sheet metal S 9 symm 3/32" ply R 4.5 offset 2 deg W&S at 0 deg. 23.5 oz Bo 25.25 basswood hollowed out tank. CG 25% without gas Silkspan over basswood 15C Aero Gloss. Dyna-Jet. F:white gas. Skid take-off. |
| | S3 | Raymond Pawloski Detroit | 147.12 | • W 19-45 laminated balsa & ply semi-symm bottom silked S 20 symm All surfaces at 0 deg Tissue covering on balsa surfaces 5C Berry Bros Bo 19 pine carved with tank Dyna-Jet F:Penn. white gas; H·Speedcraft |
| | O1 | Sigmund Danowski Wyandotte Mich | 152.09 | • W 14.5-34.65 modified Davis solid basswood S 16.94 Clark Y mahogany W&S at 0 deg "V" dihedral .75" at each tip 25 oz CG 25% Bo 24 solid pine with ¼" mahogany bottom. 5C Aero Gloss. Dyna-Jet. F:white gas. |
| | O2 | Robert Katke Spokane | 151.33 | • Design took 3-1sts, 1-2nd at National & Plymouth meets W 18-43 Clark Y aluminum ST .012. S 16 flat aluminum ST .040 W&S at 0 deg. No R 1" dihedral. 28 oz. Bo 26 from Fox-Katke-Stebbins aluminum casting. CG 20%. Reworked Dyna-Jet. F:white gas. |
| | O3 | James Richmond Sullivan, Ind | 150.32 | • W 15-40 symm solid balsa with maple spar S 22 symm aluminum 21 oz. Bo 24 carved balsa with aluminum engine mount No R W&S at 0 deg CG 7% Silk covered 15C Testor silver. Dyna-Jet. F white gas Pin-type dolly, 2 front wheels ⅝" dia., wood dowel frame serves as tail skid |
| Control Line Scale | J1 | Jose Rivera-Pimero Hato Rey, P.R | 183 | • Berkeley L-19 Bird Dog Completely planked 1/16" sheet balsa 18C butyrate Cameron .19 with throttle control F Supersonic 1000, Pl K&B, Ba Eveready, Pr Power 8/6 45' .012 lines Complete interior details including working stick and pedals |
| | J2 | Willis Schneider Florence, Ky. | 167 | • Berkeley AT-6 Planked 18C Aero Gloss. Fully detailed cockpit. K&B .19 "ported and polished", F·K&B; Pl:K&B; Pr:Tornado 9/5; H:Sullivan Hot Rock. 52.5' .012 lines. |
| | J3 | Joe Walters Enid, Okla. | 156 | • Sterling Fokker D-7 Silkspan covering 15C Testors O&R .33, F Power Mist; Pl·Champion; Ba Burgess; Pr:Power 9/6; H:E-Z Just. 60' .014 lines. |
| | S1 | Jimmie McCroskey Iredell, Tex | 311 | • F 51H Mustang scaled from North American factory plans W 30.86-163.91 laminar flow built-up sheet balsa covered S 28.61 symm 39 oz Bo 27.78 planked R 17.75 offset 20 deg when flying 5 deg dihedral Wing incidence 2 deg at root, minus 30 min at tip Minus 30 min stab incidence CG 27½. Silkspan over sheet balsa throughout 22C Aero Gloss 9 sealer, 2 clear, 11 silver 2 deg downthrust K&B 32 with hi compression head, F.Power Mist, Pl."OK"; Ba Burgess, Pr Top Flite 9/6. 3.5 min engine run. 70' .018 lines. |
| | S2 | John Barr Westchester, Ill. | 250 | • AD-3 Skyraider from "ATH" plans, modified 1 g installation Balsa sheet covering 3C Dulux enamel Fox 59 with flutter valve for 2-speed electrically controlled F.Supersonic 11, Pl. Champion, Ba·Burgess, Pr Tornado 12/6, H E-Z Just 69' .016 lines Same model S2 in Carrier event |
| | S3 | Hill Hutchins, Jr Spartanburg, S.C. | 224 | • Berkeley P-51 with planked wings 32 oz 40C Aero Gloss Fox 35, F Power Mist; Pl:Champion VG2, Ba Willard, Pr 4-bladed Power 10/6 62' .012 lines |
| | O1 | Bob Yeomans West Haven, Conn | 329 | • P2V-2 Neptune, also won Testors Best Finish Award, won 1st at '54 Mirror Model Flying Fair W 5' built up sheet balsa covered Testors inside, Aero Gloss outside 6 lbs., 30 oz. Bo carved balsa block 2 deg downthrust both K&B 29's, F O&R; Pl Champion, Pr Power 9 6 70' lines |
| | O2 | Fritz Lindgren Chicago | 308 | • P6E Curtiss Hawk W 62-1000 10 lb 8 oz Bo 42.5 longerons & formers silk covered S:130 R 60 S&R silk covered 6C auto lacquer & Midwest dope. Forster .99 with carburetor throttle control. Pl·Champion ignition; Ba:Burgess; Pr.Top Flite 14/6. Aero Spark coil. 70' lines. |
| | O3 | William Proctor Cooksville, Ont | 280 | • Stearman from Yates' AT plans Nylon covered 15C butyrate Enya 63 with extension type intake fitted for motor control Pl:Champion, Fu Power Mist, Pr Top Flite 11/6, Ba.Burgess; H:U-Reely. 65' lines. |
| Control Line Stunt | J1 | Rodney Pharis Detroit | 346.5 | • W.50-580 S 100 R 35 offset 4 deg 38 oz. Bo 37 block & sheet CG 33% W&S at 0 deg Tissue covered 20C Berry Bros & Testors Fox 35 with Forster extension F·Power Mist; Pl O&R. Ba Great Lakes; Pr: Top Flite 10/5; H.Hot Rock. |
| | J2 | Arthur Pawloski Detroit | 335.5 | • W 50-550 symm 130 sq in. flap area S 100 symm R 20 offset 2 lbs. 7 oz. CG 25% 2 deg. left thrust 20C Testors & Berry Bros. Fox .35, F.Power Mist with castor oil, Pl·"OK" Cub, Pr Y&O 10/5, H metal Speedcraft |
| | J3 | Thomas Ebejer Detroit | 319.3 | • W 50-550 S.93.5 45 oz BO 36 sheet & block 30C dope over tissue Fox .35; F·Power Mist with castor oil; Pl "OK" Cub, Pr Y&O 10/5, H Melcraft |
| | S1 | Hill Hutchins, Jr Spartanburg, S.C. | 352 | • W.48-520 Bo 36 44 oz. All setting 0 deg 16C Aero Gloss over 2-ply Silkspan. Fox .35, F O&R #4; Pl:Champion VG2; Ba Willard; Pr:Top Flite 10/6. |
| | S2 | James Ebejer Detroit | 348 | • W 50-540 S·93.5 38 oz. Bo 36 sheet & block 15C dope over tissue Fox .35, F.Power Mist with castor oil, Pl "OK" Cub, Pr Y&O 10/5, H Melcraft |
| | S3 | David Sherril Detroit | 343.5 | • W 52-550 symm S 105 R offset 5 deg Bo 37 built up CG 25% 3 deg. right thrust, Silkspan 25C Aero Gloss Fox 35 F O&R #4; Pl VG2, Ba Burgess, Pr Y&O 10/5. |
| | O1 | Don Still Beaumont, Texas | 349.8 | • "Stuka" design, Silkspan covered 8C clear 5C color Aero Gloss Fox .29, F:O&R Hellz Fyre, Pl Champion VG2, Ba Burgess, Pr Top Flite 9/6 H original |
| | O2 | Rolland McDonald Detroit | 347.2 | • W 52-550 main spar balsa & ply "I" beam false-type ribs similar to Datley designs Used on Detroit models winnings J1, J2, J3, S2, 02 CG 25% 47 oz Tissue covered 20C Bertyloid nitrate, 2C butyrate. Fox .35, F:Power Mist, Pl.Champion VB2, Ba:wet cell; Pr·Y&O 10/5, H·E-Z Just Hot Rock. |
| | O3 | George Aldrich Dallas | 343.8 | • Nobler #1 design (won '51 Internats '52 Nats) W·51.5-584. S 110 Bo·37 block & sheet 49 oz Silkspan covered 35C Aero Gloss Fox .35, F O&R #4, Pl Champion, Ba Burgess, Pr Y&O 10/5 |
| Team Racing | 1 | George Moir Mantua, N.J | | • W 27-131 solid Nylon covered Clark Y S 20 like W Bo· 21 planked Nylon covered R 9 offset ⅛" W&S at 0 deg 12C Testors, Fox .29 reworked, F:Power Mist plus homebrew, Pl.Champion, Ba:Great Lakes; Pr:Tornado 9/6&7; H E-Z Just Hot Rock |
| | 2 | Dale Biggs Galva, Ill. | | • W 25-132 built-up semi-symm pine spar sheet covered & silked CG 20% Bo 20, ⅛" hard balsa sides balsa blocks top and bottom 22 oz 15C Aero Gloss. K&B .29, F Testors 39, Pl Champion, Ba.RCA; Pr Power 9/9; H:Sullivan plastic. |
| | 3 | Capt William Smith Ent AFB, Colo. | | • W·24-126 built-up S 35 flat solid ⅛" Bo 24, ⅛" sheet hollow blocks top & bottom R 8, 2 deg in CG 10% W&S at 0 deg Silk covered 4C STA. McCoy .29, F.Supersonic 1000, Pl.Champion VG2, Ba:wet cell; Pr:Tornado 8.5/8; H:Hot Rock. |

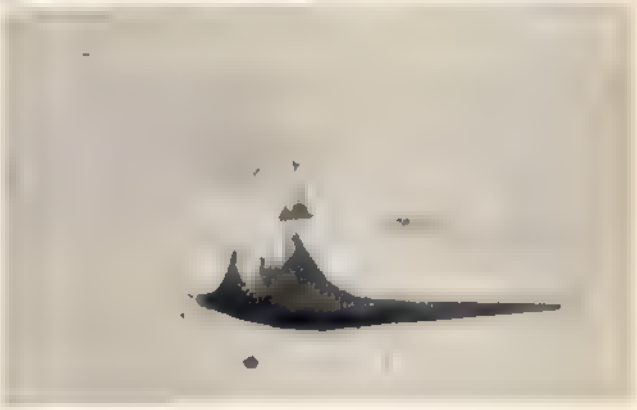
(Continued on page 76)

This mini whirly-bird is a lot closer to scale configuration-wise than you'd think; big difference is way rotors are constructed and how they work.

# Semi-Scale Sikorsky R-6

**One of history's most significant 'copters by one of modeling's most unorthodox designers; it's a mighty happy combo!**

**By ROY L. CLOUGH, JR.**



In flight the model R-6 is a majestic sight. You'll really stop traffic with this one. Easy to build and a real thrill to fly as a free flight job.

■ The Sikorsky R-6 helicopter is historically important for several reasons. As a design it marked the beginning of a trend away from unlovely steel-tube box structures, demonstrating that a helicopter could be beautiful as well as efficient. It was one of the first to be operationally fitted out as a flying ambulance—it could carry two external pods, each holding two stretchers on either side—and it took part in many early military experiments designed to test the utility and application of rotary wing craft.

The model R-6 follows in the historical tradition by introducing a new model helicopter rotor system, the "multi-phase rotor" which permits use of true mechanical cyclic control in addition to the automatic cyclic and collective pitch normally used in models.

The "multi-phase" rotor system is based on the idea that it is possible to build three distinct types of rotors which occupy the same space at the same time, so that the reactions of one rotor are modified by the others, etc. This is an extension of the co-axial system previously published in which one rotor was a rigid-feathering affair with the other a see-saw-feathering type, the interaction resulting in an automatically stable co-axial system. The multi-phase system uses three rotor blades, each with a different characteristic dynamic reaction. Thus we include the desirable features of each blade type, while suppressing the undesirable reactions in the composite meld.

(The reader should be cautioned that simply tossing together a number of different types of blades in one rotor is no guarantee that the good features will emerge and the bad features be suppressed—it can come out the other way around.)

For example: A rigid, non-feathering blade produces a nose-up resultant in forward flight, it does not autorotate; a Clough-type tip weighted blade produces a nose-down resultant in forward flight, and it autorotates beautifully; an angled hinge blade will tend to adjust pitching motions, it autorotates fairly well, but it is very critical in adjustment. In the multi-phase system we use the rigid blade to counter the nose-down tendency of the feathering blade (as in the Berkeley model D). What does the angled hinge blade do?

On this particular model we wanted to use a manually set cyclic control which flips the feathering blade to produce forward flight by mechanical cycling, as in full scale, rather than by induced or C.G. shift cycling as is generally done in models. But, if we use a fixed cyclic deflection on the feathering blade, in conjunction with a fixed pitch stabilizing blade, we discover that as the speed of the model increases in forward flight we have two cyclic forces: first, the fixed mechanical cycling which will always be the same, and second, the dynamic cycling caused by air pressure on the entering edge of the rotor disk. This induced cycling increases with forward speed at about the same rate as the nose-up cycling effect produced by the fixed pitch blade; therefore, if we add mechanical cycling to it we find that the model will accelerate and go into a dive. We could prevent this by using larger fixed blades operating at greater pitch—but this would spoil the autorotation.

So we add an angled hinge blade to the system. This will autorotate, and as forward speed increases the air pressure in front of the disk causes it to bend downward and increase its pitch on the advancing

side, and bend upward and decrease its pitch on the retreating side. Now we can pre-set the rotor system with a fixed amount of cyclic deflection on the feathering blade and the model will accelerate up to the point where the induced *reverse* cycling of the angle-hinge blade cancels out both the pre-set and induced cycling in the feathering blade and will go no faster. If air conditions, gusts, tend to speed up the model the rotor system increases its cycling momentarily to kill off the speed, then resumes normal operations. If, in calm air, we launch the model sharply nose down, it slides forward, slows down, then finds its own optimum speed, and proceeds at that rate.

When the power stops the model descends in autorotation, the rate of descent being governed by the fixed pitch blade which acts as a governor upon the two automatic blades. This incidentally does not produce a wobbling descent, provided any reasonable autorotational speed is maintained—90 rpm or a little better.

### Construction

The model is a keel job; lay out and bulkhead in the usual manner. Note how the landing gear struts are cemented in position between blocks. Make sure these are dry before covering. The rotor mast should not be hard steel wire—use something fairly soft so it can be adjusted easily. The nose block goes on after covering. The covering may be 1/32" sheet balsa, or fairly stiff double-calendered paper miking about .008. If you use paper, start at the tail and work forward, lapping each joint ⅛" on the bulkheads. This paper covering trick produces an extremely smooth sheet-metal appearance and finishes with a minimum of doping, but it is slightly heavier. Whichever cover is used, note that the top area between bulkhead C and B must be covered before the pylon is sheathed in. This provides a working base to which to trim the pylon covering. Also be sure to cut a slot for the rear wheel strut.

The tail rotor is simulated by a plastic disk. Edge it with a circle of rattan or reed to keep its shape. It functions purely as keel surface. Cabin detail is painted on in a contrasting color—silver blue makes a good "glass"—and the front of the machine may be doped as much as desired since additional ballast will be needed in any event to balance the tail boom.

Before tangling with the rotor mechanism study the plan carefully. Sheet metal parts may be cut from tin can stock or secured from a Berkeley kit where applicable. The big idea here is to have everything tight that should be tight and freely-working on pivots and hinges. The rotor mast bearing should be very free, almost sloppy, but the pivots should work easily without any play for best results.

The rotor blades are very simple, and while you're at it make a couple of spares, just in case. Assemble the works and check the blade balance next. It won't ordinarily happen, but it is possible that the rotor assembly may balance perfectly by accident due to wood density variations. If this should happen, don't fly the model this way because a little extra mass is required on the tips of the fixed and angled hinge blades—about equal to a dime. If in the balancing operation more weight is required on the feathering blade with the tip weight, add this extra weight on the hinge line, not on the counterweight arm. Do not put the cyclic mechanism on yet.

The original model used a Wasp with its fuel tank modified as shown on the plans so it would operate without throwing fuel out of the vents.

Let's fly it. Check the C.G. location by holding the model sidewise by the engine shaft. If the tail dips down it is tail heavy and may dive; the best trial position is very slightly nose heavy or balanced on the mast axis.

Fire up the engine and make sure it is delivering full power before releasing the model—a ragged 2-4 cycling engine is poison. Release the model from a level position and *watch* it! If you have followed directions closely the machine will rise up steadily, move forward very slowly and will probably circle rather tightly to the left—probably a bit tighter than you may desire, so bend the rotor mast slightly to the model's right, which will make it fly straight, or turn to the right, depending upon degree of bend. This, by the way, is your combined rudder-aileron control on this type model.

Fore and aft trim is accommodated by shifting the ballast—in reverse fashion, that is, more weight forward to kill off a dive, more weight aft to stop tail-sliding.

Once the trim settings are mastered the model can be flown that way if desired, but the cyclic control is more fun since it allows a choice of vertical ascent or horizontal flight at the flip of a lever (or more accurately, the bending of a wire!). Trim the model to rise vertically with a minimum of forward motion, then install the cyclic control. Simply cement a length of paper clip wire to the side of the pylon, as shown, and solder a short length of springy steel wire to the arm holding the feathering blade and blend it so the blade is flipped gently each revolution. Vary the position of the tripper by bending it up or down to regulate the cyclic deflection—not much is needed.

Now, with this control, and by varying the rotor tilt you can make it climb straight, fly forward, cruise in circles or any combination desired. Near-hovering can be obtained by cutting the fuel with a straight 3-1 mix of alky and castor oil.

### Guide to Helicopter Adjustment

Model helicopter flyers may find it easier to re-

Sikorsky R-6 built in 1943 was the first military high-performance helicopter. It would climb to 5000 ft. in 7 minutes, could carry bombs.

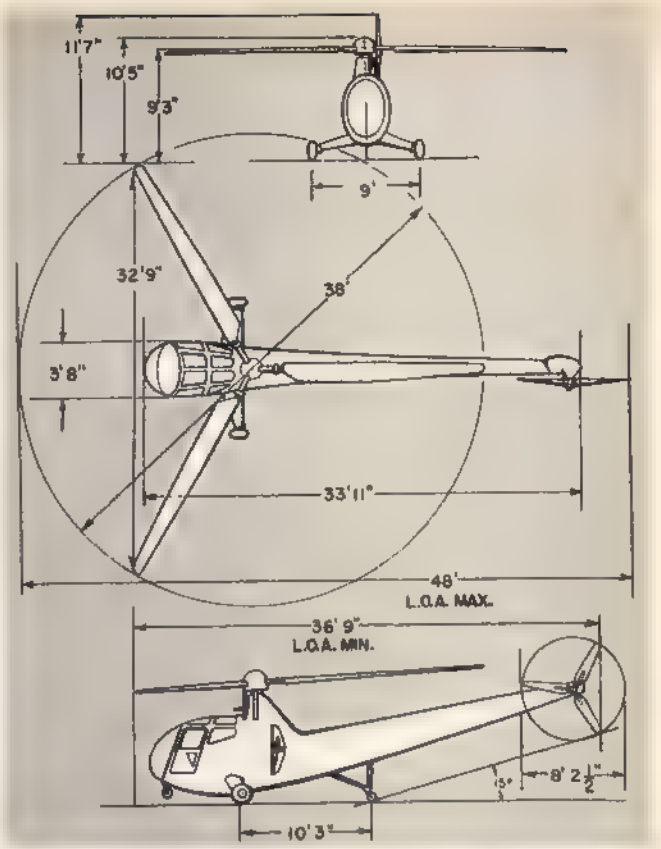
Glidden Doman of Doman Helicopters, Inc., used an R-6 to experiment with his dynamically balanced rotor system (no vibration).

The cabin of the R-6 was built of molded plastic impregnated Fiberglas, probably the first use of this material in production aircraft.

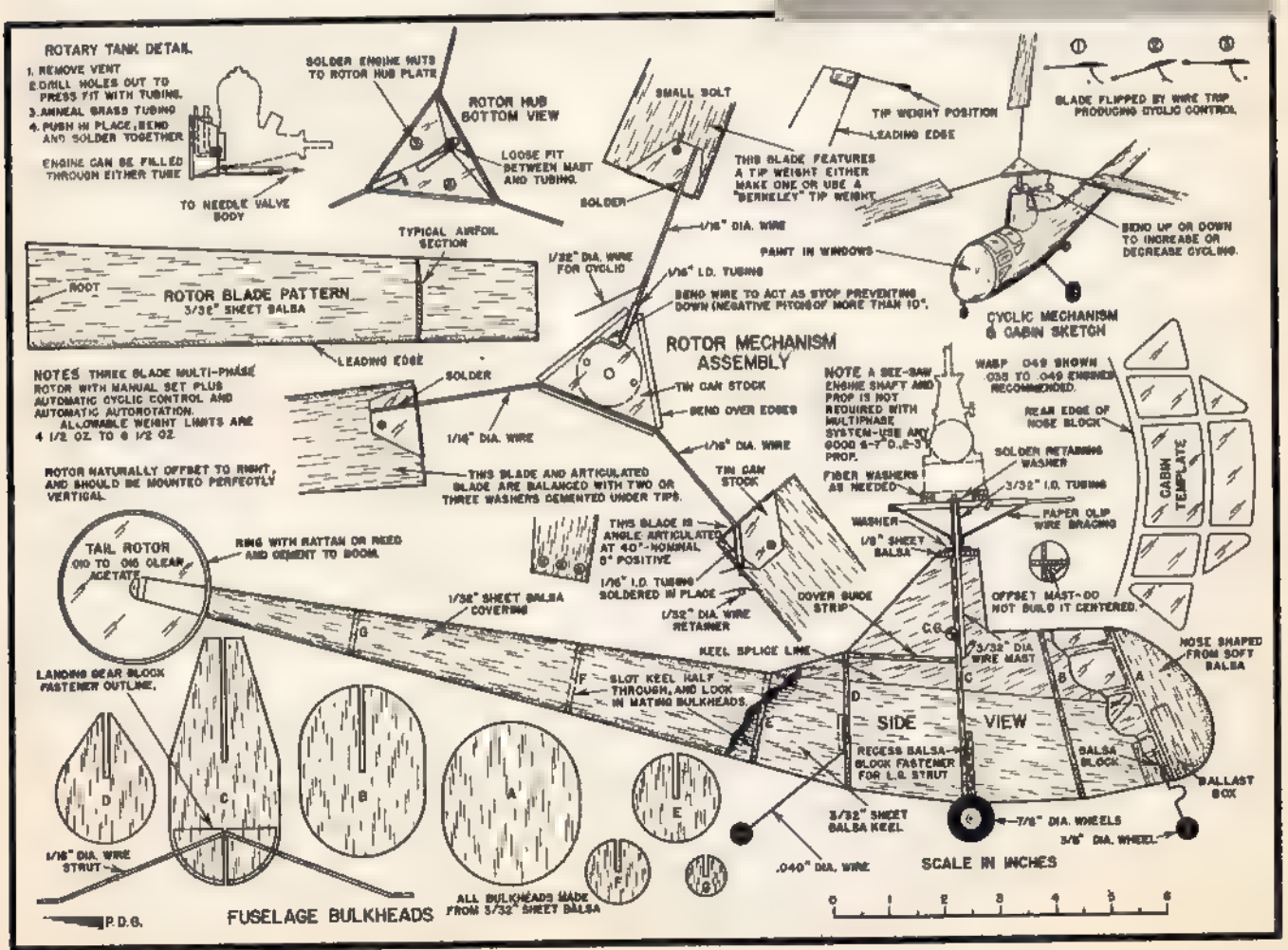
member helicopter model adjustments by making an analogy to fixed wing practice, thus:

| *Conventional Equivalent* | *Helicopter* |
|---|---|
| Horizontal Stabilizer . . | Fixed pitch rotor blade or See-saw engine prop or Torsion tail surface(s) |
| Ailerons (wash-in—out) . | Lateral mast tilt |
| Rudder . . . . . | Tail rotor, mast brake, downwash fins under motor. |
| Thrust Line . . . . . | Center of gravity location moving aft increases D.Th. |
| Glide Angle . . . . . | Speed in Vertical FPM in Autorotation |

Therefore we note that increasing the pitch of the fixed blade(s) reacts similarly to increasing the angle (negative) of a horizontal stabilizer, bringing the nose up under power, or, decreasing the gliding speed (rate of descent, power off). The rudder function, yaw, is obtained by a tail rotor, by a brake on the spinning main rotor, or by means of fins tending to promote or stop rotation of the fuselage in the slipstream. Aileron control, or bank-turn is by tilting the rotor laterally so the engine shaft inclines toward the desired direction, and altering the dynamic pressure on the feathering blades by moving the C.G. aft (or forward) resolves out as downthrust or upthrust respectively.




**Full-size plans for the Sikorsky R-6 are part of Group Plan # 55A from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y. (50¢)**



As this photo so vividly illustrates, the problem of smooth take-off areas for payload flying is a world-wide one. Here a Japanese contestant ROG's his Class A-B PAA-Load entry. Under the latest set of competition regulations good runways become a real "must."

# PAA-Load Flying Starts Eighth Year Sponsored by World's Largest Airline

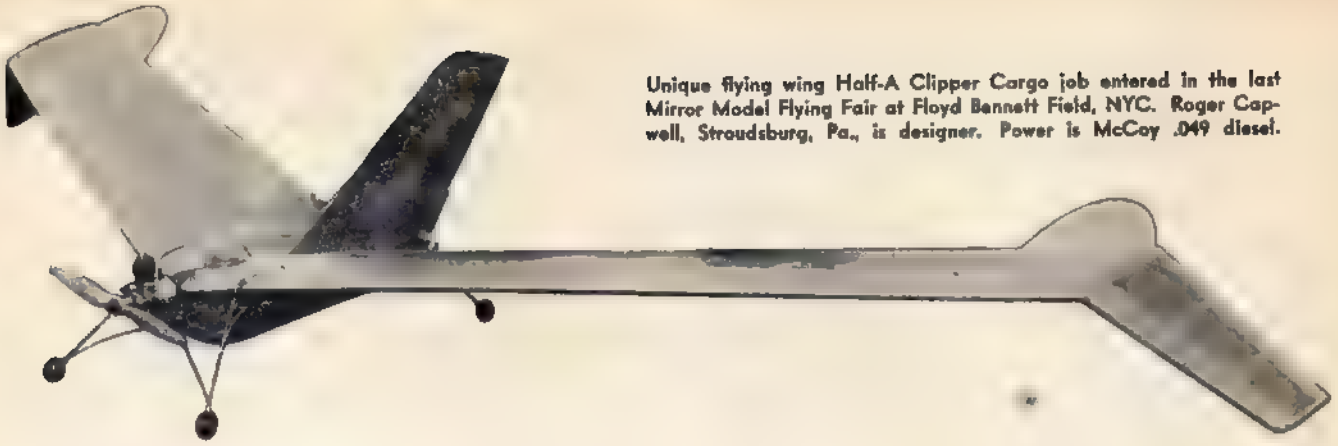
**Weight-lifting for limited flight time, fixed payload flying for duration attract the free flight fan; now the control line crowd has endurance as an official event**

■ 1955 is the year for scheduled changes in the AMA model plane contest rules, and the PAA events are no exception. So that builders can get going on their 1955 contest season designs right now, Pan American has let us in on what the rules require in their very popular events. The final rules may show minor wording changes to clarify the requirements, but they will be basically as we give them, so you can start designing and building right *now*.

Before we get into the changes, let's take a brief look at the past record of PAA events, and get a better idea of why they are set up so differently from the regular AMA free flight categories. Up till now all PAA contests have been sponsored by Pan American World Airways, and the basic idea behind them is to reproduce in model size what Pan American has to do in their big plane operations—namely, carry as much pay load as their planes can handle with safety. Reducing things to model size, then, the PAA events are based upon making a model carry a sizable pay load, the latter taking the form of an "Occupant" ("dummy") plus additional weight in all events.

The PAA-Load events have been very popular at all contests where they have been conducted, especially since it is possible to fly a PAA-Load plane in regular free flight by just removing the weighted occupant. It was most fortunate for model aviation that Dallas Sherman, an executive at Pan American, was (and still is) an avid model plane builder; he drew up a set of rules for PAA-Load flying and was able to

Pan Am's Dallas Sherman, "Mr. PAA-Load" himself (for left) gets certificate of appreciation from Japan's admiring aeromodelers. While in the Far East Mr. Sherman aided many modeling groups.



Unique flying wing Half-A Clipper Cargo job entered in the last Mirror Model Flying Fair at Floyd Bennett Field, NYC. Roger Capwell, Stroudsburg, Pa., is designer. Power is McCoy .049 diesel.

interest his company in sponsoring the first such event at the Olathe Nationals in 1948. That first event was for Class B-engined planes only, but the rules have been refined along the way, and more events added as new ideas in load carrying for model planes were dreamed up.

Shortly after the 1948 Nats, Mr. Sherman was shifted to Japan, to take care of Pan American business in that area, and the burden of covering the American meets where it was felt that PAA-Load events would be worthwhile fell upon PAA's Educational Director—George Gardner. Since then George has become a familiar sight at the large model meets, and he has certainly performed a real service to model aviation, through his tireless efforts to promote interest in PAA-Load flying and the various experimental events that have been offshoots of this activity.

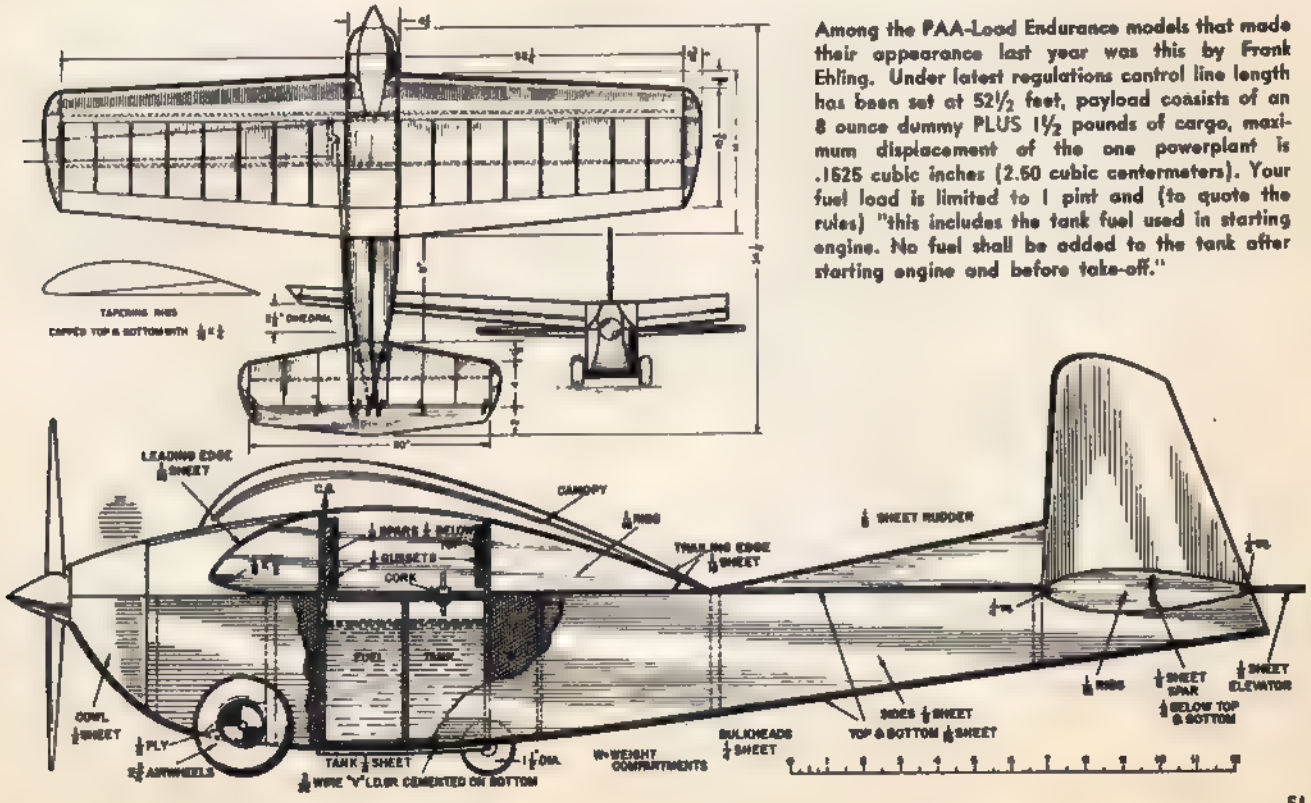
Just to show the interest in the PAA events, at the 1954 Nationals at Glenview, approximately half of the entrants (and there were some 1400 of them) signified their intention of trying one of the PAA categories; a lot of them didn't get to it, since the Nats was a rather hectic short-time affair in 1954, but about 300 modelers actually flew in one or more of the PAA events.

So much for the background—now what can we look forward to in 1955? Well, the big change will be in the PAA-Load events, which will be held for engines of Half-A size and for those in the International or FAI class—engines up to .1525 cu. in. Now before you old PAA-Load enthusiasts start screaming about the dropping of the A-B class, look at it from PAA's standpoint; these contests aren't held only in the USA—Pan American has held them in many foreign countries, including England, Japan, Cuba, Puerto Rico, and others. Many of these countries operate with the FAI engine classifications, and in England, for example, there just weren't many engines available in the A and B classes that we have. So what's more logical than to fit the rules to the FAI class of engines, which can be had anywhere there is model aviation?

To adapt the rules even more widely to overseas use, the "America" class will include *two* categories of engines—covering the Half-A engines of up to .050 cu. in., and the popular small overseas class of engine, the 1 cc. size (.061 cu. in.). Since it might be desirable to fly these two sizes of engines together in a single meet, the rules will specify that this is acceptable, and as the larger engine has to carry added Cargo weight, it is thought that results will equalize nicely.

Actually, these changes will not work much of a hardship on the American contestants; there are two good engines of about .15 made here now (the Cub .14 and Torp .15) and there will probably be more soon. Cub also makes a .19 that fits exactly into the same mounts as their .14, and weighs very little more, so conversion to an engine at the top of the American A Free Flight category will be no problem.

O.K.—so you might have to adapt a new engine size to your PAA-Load ship: what else? Well, the plane is going to have to carry considerably more weight; for Half-A, it will be another ounce, while for the International size, the plane will carry the same weight that you used to stow into your B-en-




Among the PAA-Load Endurance models that made their appearance last year was this by Frank Ehling. Under latest regulations control line length has been set at 52½ feet, payload consists of an 8 ounce dummy PLUS 1½ pounds of cargo, maximum displacement of the one powerplant is .1525 cubic inches (2.50 cubic centermeters). Your fuel load is limited to 1 pint and (to quote the rules) "this includes the tank fuel used in starting engine. No fuel shall be added to the tank after starting engine and before take-off."

# PAA-Load Rules for Eighth Year

gined models. It works out like this: you will use the same old Half-A occupant for both the divisions in the American classification, but the planes with engines up to .050 cu. in. will tote an *added cargo* of one ounce, while those with 1 cc. power must pack in 2 oz. Thus, the two America categories may be flown together in the same contest; actually, most of the 1 cc. models will be in overseas events, while the .050 (maximum) cu. in. engines will be predominant in the U.S.A. For the International class, you must carry the same size and weight of occupant as in the old A class—an 8 oz. dummy—but *in addition*, the plane also has to carry 8 more ounces of cargo, or a total of 16 oz. Since PAA-Load planes have been flying more and more like regular free flight jobs, these new load provisions may serve to keep so many of them from flying away!

Other than these changes, the rules are very much as they have been in the past. There will be the same two age groups for PAA-Load—Combined Junior-Senior (under 21), and Open for modelers over 21. All models must ROG, maximum engine run is 20 sec., and in most cases, maximum flight time is 6 minutes.

The Clipper Cargo event, which is made to order for the real aerodynamic bigdomes among model builders, has few changes. There is still just one age classification—everyone competes in a combined all-age group. While there are two engine sizes America class in the PAA-Load event, the same two sizes will not be extended to Clipper. As Clipper is a special event, and will probably only be flown at the Nationals and perhaps one more very large 1955 meet in this country, it is felt that only up to .050 cu. in. engines should be allowed in the U.S.A. Probably any overseas flying of Clipper will specify 1 cc. engines as the top. In any case, occupant size will be as for Half-A, and the same weight specifications that prevailed in 1954 will still hold this year.

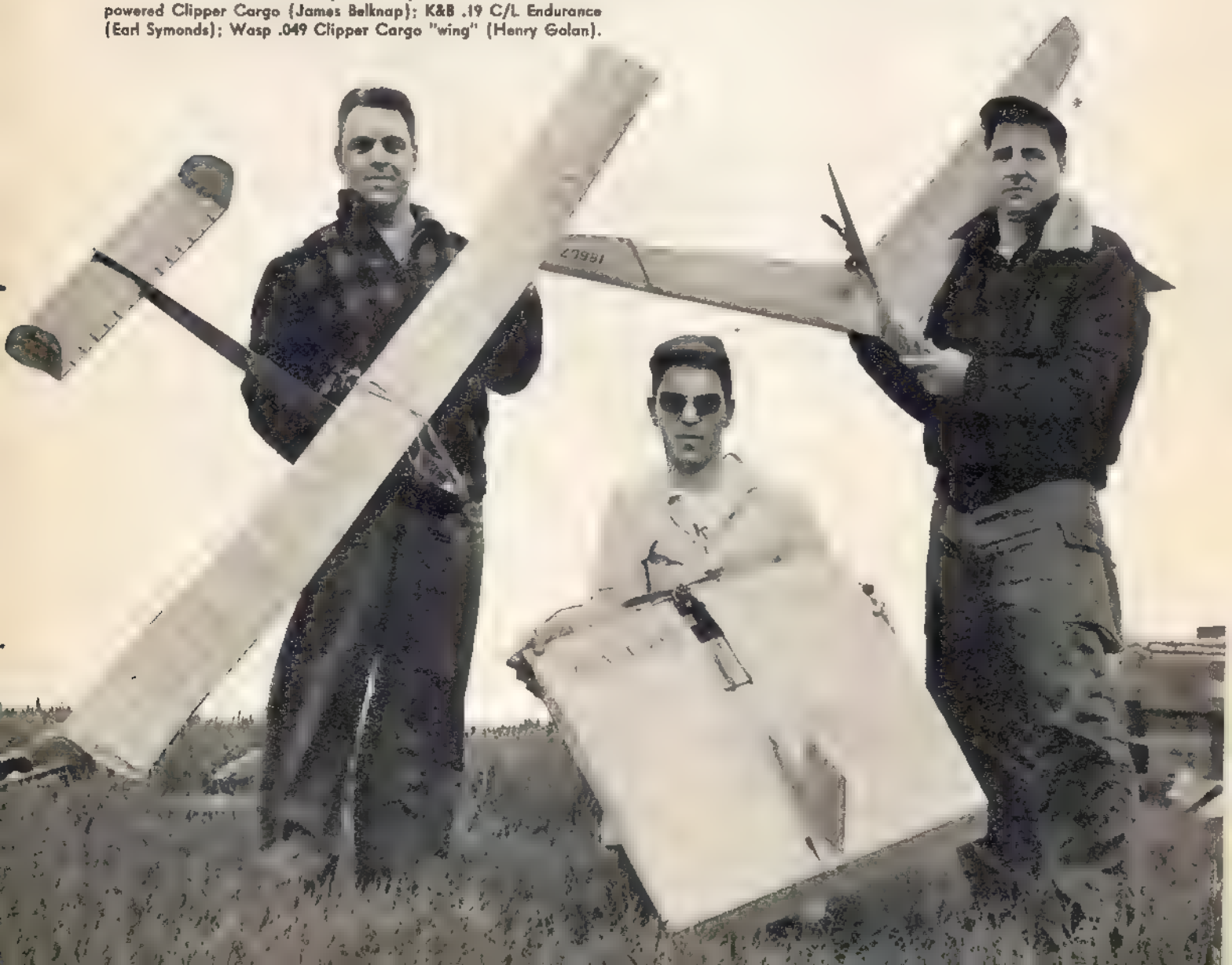
ROG take-offs are mandatory, of course, engine run cannot exceed 20 sec., and the plane must stay in the air for at least 40 sec. in order to score for an official flight. The model which staggers aloft with the greatest weight, and stays up the required 40 sec. wins. However, all flights will be scored for duration, and in cases of ties, the model that has the best time will take the higher place.

These rules probably sound tough, and they are intended to be. But if you think Half-A models can't lift much weight, take note that the 1954 Nats winner made a flight of 43.6 sec. and toted a 25½ oz. load. And the top Clipper record was 40.8 sec. with 32¾ oz.!

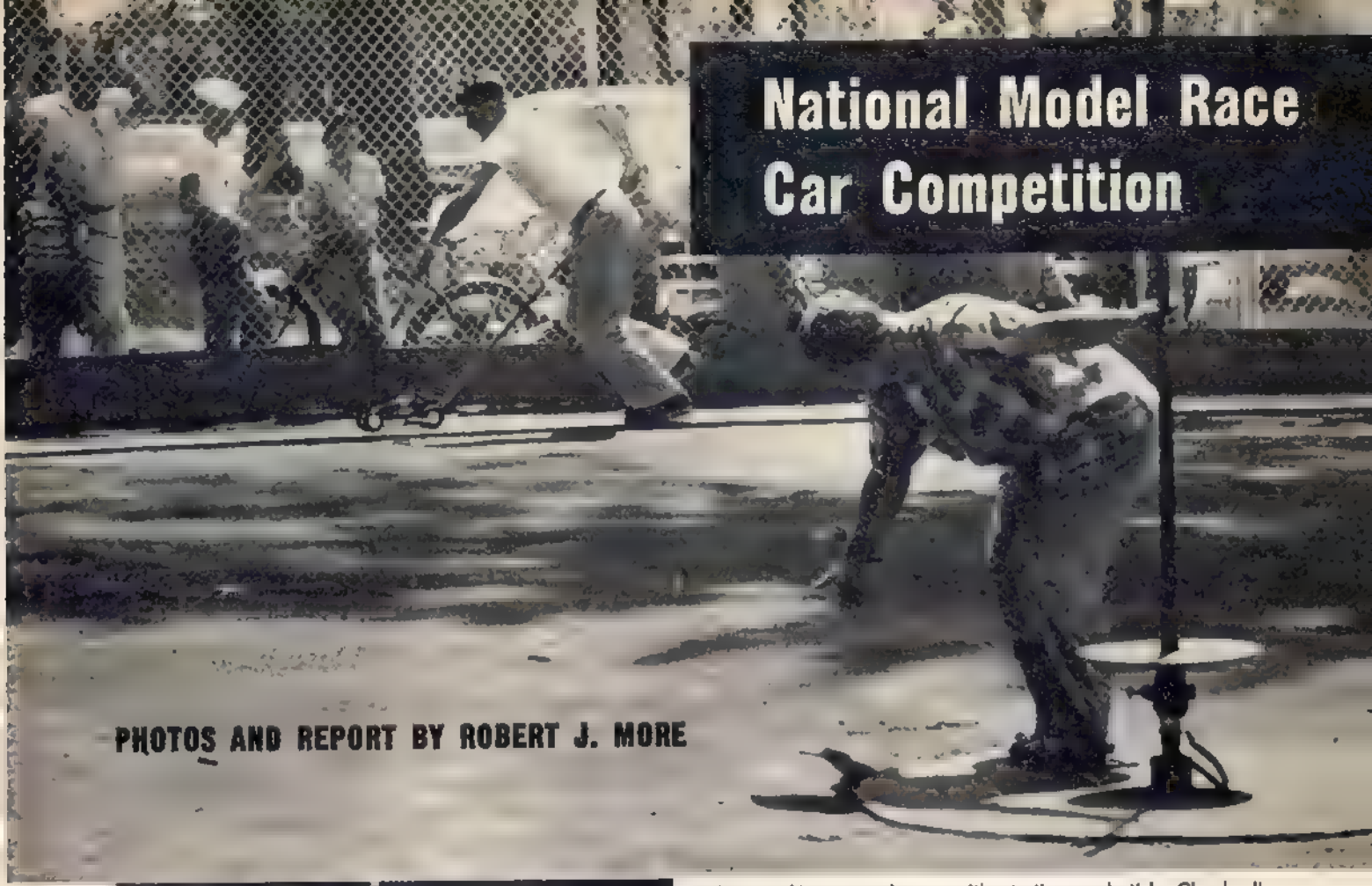
Needless to say, carrying such a load in a very light airframe leads to a good many false attempts at takeoff. PAA recognized this, and in the past has allowed the contestants five official flights and two attempts for each official—or a total of ten flights. However, in order to conform more closely to AMA rules, it will be six attempts to complete three officials henceforth. Since many landings are not exactly soft, the rules specify that upon conclusion of each official flight, the model must be presented to the timer for inspection; if there is any doubt that the plane landed "safely," the contestant will have a chance to prove his point by making another flight within ten minutes (with or without cargo, as he wishes).

In both Clipper Cargo and PAA-Load events, where Pan American furnishes prizes, models must carry the designation "PAA" in letters not less than 3" high on the upper left hand main lifting surface. Considering those beautiful Bulova watches George Gardner hands out to the top places (ask a PAA winner to show you *his*), we (*Continued on page 92*)

Unusual Mirror PAA-Loads (from left): OK Cub .049 diesel powered Clipper Cargo (James Belknap); K&B .19 C/L Endurance (Earl Symonds); Wasp .049 Clipper Cargo "wing" (Henry Golan).



# National Model Race Car Competition



PHOTOS AND REPORT BY ROBERT J. MORE

Happy pair: Walter Wilson, 22 (left), holder of Custom class world's record with phenomenal 151.75 mph; John Syrbrandt, 16.

These were the entries on hand for start of the National Model Race Car Meet. Two front cars are entered in Spur Gear class.

Best cars: Kantrow's Custom Proto (Champ); Fox's Spur Gear; Noward's Custom Sportsman; Richard's Old Timer Proto (BB).

Getting his car underway with starting push-stick, Cleveland's Ray Hunter ended in 13th place; George Faczko starts whipping.

## All of Anderson, Ind., turns out—including Hix Honor the Mayor—when the model race gang hit town for annual classic

■ The old favorites plugged along turning one good, fast run after the other. It looked as though things were running according to pattern. Kruse, Fox, Loose and many of the other "hot shots" were up there and it looked like it was just a matter of which one got the best track and weather . . . he'd be the winner. But someone sure forgot to tell this to a fifteen-year-old by the name of Joe Kantrow, Jr. He had qualified high—in fact tied for first—but no one noticed that too much. Thoughts on race day were on which one of the "names" would win. Would it be Bissman, Franz, Prussian or someone else? Kantrow tied at 147.78 mph. So it remained till the end of the day and then it had to be run off. Tension fell on the pit area. Just minutes earlier Doc Morris' car had crashed as the cable parted to add even more pressure.

Kruse was first to run and it was a good one—146. Now it was up to the Motor City lad. All other speeds he had turned before meant nothing now. He shoved her off, the engine coughed, and she was under way. The car built up speed rapidly for almost a mile. All eyes were on young Joe hoping he wouldn't wait too long. He squeezed the timer button and the clock raced—four, five, six—the car never let up. Mel Knell called out over the mike, "Time for the quarter mile distance was 6.05 seconds or 148.76 mph. There's your new Champion!"

And there he was: first of the young fellows to break through and it looks like more to come. Walter Wilson Jr., 22 (our Custom Proto World record holder at 151.75 mph), John

Careful cleaning is as important as careful running of a car. Bob Bratton uses syringe and white gas for clean-up at end of day.

Larry Macaluso of New Orleans doing fast gear box repair job. Was back on track in 20 minutes after gear-holding pin had sheared.

"That's it—shut it off!" Timer-announcer Al Winter gives welcome signal to contestant indicating official time was recorded.

Sybrandt III, 16, Jerry Pope, 18, Don Clark, 15, Lee Cuny, Phil Rich, Ted Brunning and Bob Bratton are some of those in this younger group and more are joining. This is a hobby for young and old alike.

Our thanks to the people of Anderson, Indiana, for their wonderful hospitality. Any wish expressed to Mr. Mayor brought action. When it was time to scrub the track, there was a fire truck complete with four or five men. Tables were painted, flags hung and when we needed a tape to accurately measure a new cable, Mr. Mayor turned to one of the City Commissioners and said, "Go over to the Department of Weights and Measures and see what you can find." Sure enough we soon had one. The Mayor left us, telling of future plans to further improve the track and invited us to return there next year with the Nats. Needless to say, it would be a pleasure.

Before we go too far along I think it might be a good idea to explain briefly the sport of model car racing. First, all cars are powered by a .601 cubic inch displacement, two cycle engine. Ninety-nine percent of these are Dooling .61s. The car is geared and tired so that when it is up in the 140s, the engine is turning about 22,000 rpm. The rest of the power train consists of 1.5 or 1.75 gears and 4 inch diameter tires. That gear ratio means that if 1.5 to 1 gears are used the engine is running 1½ times faster than the wheels. Ball bearings are used throughout engine and car. Ignition is standard and best by magneto. Since the fuel we use is essentially glow plug "Blast," we have no ignition switch (Custom Sportsman Class excluded) but instead we use a full shut-off valve.

We put this six pound hunk of gears and stuff on a track that is concrete and seventy feet in diameter. Timed runs are ¼ mile or six laps and the timing is in 1/100th of a second and electrically actuated through a center pole micro switch. For safety, we recently increased our cable size which is now .050 inches in diameter and 35 feet long.

There you have all the necessary ingredients. Give the car a push and we're off to the races.

### Tuesday

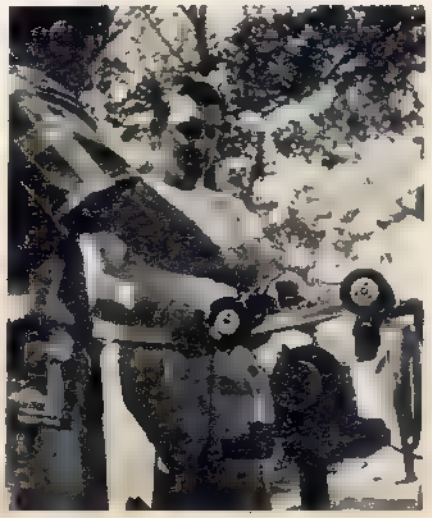
We arrived early Tuesday evening to find to our surprise that plenty had happened already. Some eager beavers arrive Monday for a Thursday event! Yep, lots happened. Bob Loose and Stan Prussian blew into town just itchin' to run—but no welcoming committee. They got Doc Cronin on the phone who promptly flew down from northern Indiana with clock, cables, etc. So the boys set up the track and Loose promptly turned 148. Not content with this he switched from his 1.75 gears to 1.5s, shoved off the car, and right away tossed off both tires. This made the axle look something like a pretzel. DiGeorge of Boston then hit 145 but never attained speed after that. The New Orleans gang headed by Bill Wunderlich was also there but a bit tired from an 800 mile drive. Higgins, Rott, and Feczko also hit town early.

### Wednesday

Prussian, the 150 mark breaker, was out for more practice but had bad luck when a new style wrist pin shifted in the piston, caught the ports and scrambled the engine. Bad luck was destined to dog him throughout the week. By this time oil and rubber lay on the track in such globs (due to so much

The National Champion! 15-year-old Joe Kantrow, Jr., and his 148 mph "1234" class car. Joe's from Detroit; has big future ahead.

Starter motor is nice thing to have when car won't run. Here George Feczko and Jimmy Petrakis are trying to cure balky ignition job.



Considered an extremely fast car in its classification, Don Clark, 15, races this McCoy .60 powered Invader at speeds up to 115.98

running and no track cleaning) that cars began to spin. William More found that out when his Fox car engine did 180 mph, but the rest of the "bucket" wasn't even worth timing. This happened twice. After the last attempt he discovered broken tank mounts as did many others due to vibration from excessive slipping. That was trivial compared to Frank Higgins' problems, though, for he sheared gear pins twice! This pin secures one of the two gears to the axle and, of course, without it the wheels won't turn. Replacement means dismantling the car and gear box and about two hours' work to do it right. Carl Franz must not have noticed all the woes, though, 'cause he ran 145, wet track or no wet track. We all went back into town then just in time to see the Howard Foxes pull in bright and cheerful (?) after a non-stop 700 mile drive.

### Thursday—Qualifying

This was it—the start of qualifying. The Mayor of Anderson and several City Commissioners showed up to officially open the track. In a short speech, Mr. Mayor extended an invitation to the AMRCA to have the '55 nationals back here at Anderson. His Honor cut the tape and proxy runner Jimmy Petrakis, with Ed Rogers' car, was the first on the track. Fox followed, sans test run, with a mighty 147.54 which was to remain high qualifying time topped only by young Kantrow. To avoid the slipping trouble we had experienced yesterday, Fox suggested cleaning the track after every ten cars. Each ten owners were to clean it for the next group. Idea was accepted and it worked out beautifully. Prussian, a prerace favorite, had the unbelievable misfortune to have the clock fail on three successive runs.

The air was mighty blue after No. 3. Seemed as though all the hot shots were jinxed by that clock as Junior Wilson, Sordelet and Kruse all had the same trouble. Petrakis seemed to be proxy running for everybody and such troubles starting!

## MODEL RACE CAR RECORDS

### Officially Recognized by the American Miniature Racing Car Association

| Name | Class | Car | Speed (mph) | Place & Date |
|---|---|---|---|---|
| Walter Wilson, Jr. | Custom Proto | Flynt | 151.77 | Anderson, Ind., 6/54 |
| Robert More | Modified Manufactured Proto | Arrow Dooling | 144.46 | Bethlehem, Pa., 7/53 |
| Al Winters | Spur Gear | Borden | 144.00 | Bethlehem, Pa., 7/53 |
| Jack Oliver | Custom Sportsman | 1234 | 134.73 | Akron, Ohio, 5/54 |
| Franny Wolf | Manufactured Proto | Arrow | 130.81 | Bethlehem, Pa., 7/53 |

*Note: All speeds were set on 1/24th mile track; cable size, .051"*

Cars had no spark and Jim was running out of "gas" himself. Those with starting troubles got one break, though. After one trip around Chief Tabulator Norward would reach under his desk, haul out an eight foot push stick, roar out on the track, shove the poor panting soul aside and just like that start the car. We believe there are magic words involved in his success story.

All attention focused on the track as Junior Wilson took his rerun. The clock operated this time but the plug blew causing the engine to lose compression and the car limped through the last few laps for 142.86. The Sordelet and Kruse Team turned in almost identical speeds to remain together for the finals qualifying in 6th and 7th spots. They had lots of timer trouble, too, though, and on Kruse's good run he punched the clock button so hard it stuck . . . had to be pried out.

With the exception of Fox the entire Eastern gang was having a terrible time. Name any ailment, they had it. Californian Earl Hutton had the misfortune to have a piston stick on the fifth timed lap. Net result was two flat tires and one weary engine. Phil Rich, a newcomer to cars but an experienced controlline model plane man, bought the late, past-Pres. Matthew's fleet of cars and entered them. It was felt that it would be only fitting that Matthews' AMRCA No. 18 should be assigned to him. Then at the end of the day another 15-year-older, Don Clark, shoved off his big McCoy Invader (Mac 60 powered) and for a time led in BB with 115.96 holding the winner, Guy Richards, at bay. Engine stuck but this doesn't hurt a Mac.

### Friday—Still Qualifying

Foxy tried 1½ gears as Loose had done and the tires stayed on but no speed. Hutton's all-night labor was wasted, as he pushed her off only to have the fly wheel let loose. And Loose's all-night labor paid off with 147.06—but those poor bloodshot eyes. Red Abraham's car was most startling. Most cars take

Ted Brunning hooks up Leroy Lehner's car. Since racing is one-at-a-time deal it's a lot less confusing than model plane meets.

Graceful galloper is Stan Prussian of Brookline, Mass., first to crack the 150 mph mark. A healthy push is needed for starting.

General view of pit area shows some of the elaborate portable work boxes that many enthusiasts construct. Area is completely fenced.

## 12TH ANNUAL RACE RESULTS A.M.R.C.A. NATIONAL CHAMPSHIONSHIP 1954

### Custom Proto Class

| | NAME | ADDRESS | CAR | QUALIFIED | CHAMPIONSHIP |
|---|---|---|---|---|---|
| 1 | Joe Kantrow Jr., | Detroit, Mich. | 1234 | 147.54 | 147.78* |
| 2 | Paul Kruse, | Fort Wayne, Ind. | 1234 | 146.83 | 147.78 |
| 3 | Howard Fox, | Bethlehem, Pa. | Fox | 147.54 | 146.83 |
| 4 | Bill Bissman, | Mansfield, Ohio | 1234 | 149.08 | 146.58 |
| 5 | Elmer Serdelet, | Fort Wayne, Ind. | 1234 | 146.34 | 145.40 |
| 6 | Charles Flynt, | Belleville, Ill. | Flynt | 146.34 | 145.18 |
| 7 | Joe Kantrow Sr., | Detroit, Mich. | Fox | 142.18 | 143.77* |
| 8 | Carl Franz, | Lafayette, Ind | Own | 144.46 | 143.77 |
| 9 | Robert Garrets, | Chicago, Ill | Fox | 144.23 | 143.77 |
| 10 | Robert Loose, | Reading, Pa. | Fox | 147.06 | 143.54 |
| 11 | Walter Wilson Jr., | St. Louis, Mo. | Flynt | 143.31 | 142.80* |
| 12 | John Sybrandt Jr., | Wilmette, Ill | Fox | 142.63 | 142.86 |
| 13 | Ray Hunter, | Cleveland, Ohio | 1234 | 140.63 | 142.83 |
| 14 | Guy Richards, | Akron, Ohio | Fox | 141 96 | 142 41* |
| 15 | M. L. Davis, | Harvey, Ill | Davis | 142 86 | 142 41 |
| 16 | Glenn Fairabend, | Detroit, Mich. | 1234 | 143.77 | 142 16 |
| 17 | W. S. More, | Bethlehem, Pa. | Fox | 143.31 | 141 96 |
| 18 | Clarence Miller | Columbus, Ohio | Own | 142.86 | 141 71 |
| 19 | F. J. Higgens, | Highland Park, N. J. | Fox | 142.41 | 141 71 |
| 20 | John Cutuli, | Bethlehem, Pa | Own | 140 41 | 141 51 |
| 21 | Mel Knell | Champaign, Ill | 1934 | 143.08 | 141 29 |
| 22 | Joseph Hilburt, | Brookline, Mass. | Fox | 142 41 | 140 85 |
| 23 | Robert More, | Bethlehem, Pa. | Arrow Special | 141 96 | 140 19 |
| 24 | Carl Noward | Toledo Ohio | Noward | 141 07 | 140 07 |
| 25 | Earl Morris, | Muncie, Ind. | Fox | 140 85 | 139 75 |
| 26 | Warren Borden, | Waukegan, Ill. | Own | 142 63 | 139 53 |
| 27 | Herb Herrell, | Columbus, Ohio | Own | 141 29 | 139 32* |
| 28 | Phil Smith, | New Castle, Ind | Noward | 174 53 | 139 32 |
| 29 | John Sybrandt Sr., | Wilmette, Ill | C.G.S. | 141 50 | 138 89 |
| 30 | Walter Wilson Sr., | St. Louis, Mo | Flynt | 141 71 | 138 07 |
| 31 | Ralph Abraham, | Akron, Ohio | Own | 140 18 | 138 04 |
| 32 | Stan Prusaian, | Brookline, Mass. | Fox | 144 69 | 137 83 |
| 33 | Jerry Pope | Champaign, Ill | Noward | 139 53 | 137 40 |
| 34 | Bob Peckham, | Atlanta, Ga. | 1234 | 137.83 | 134 37 |
| 35 | Laurence Macaluso, | New Orleans, La. | Rebel | 138.04 | 133 73 |
| 36 | Lee Cluny, | New Orleans, La. | Rebel | 133 30 | 129 31 |
| 37 | Al Cervenka, | Chicago Ill | C.G.S. | 144 69** | |
| 38 | Al Winters | Philadelphia Pa. | Fox | 139 07** | |
| 39 | Ted Brunning, | New Orleans, La. | Rebel | 134 39** | |
| 40 | Franny Wolf | Reading, Pa. | Fox | 139 51** | |
| 41 | Phil J. Rich, | Roscoe Ill | Fox | 138 46** | |
| 42 | Bob Bratton | Jersey City N. J. | Own | 139 43 | |
| 43 | Bill Cronin | Hartford City, Ind | 1234 | 133 30 | |
| 44 | Dan Dyer, | Atlanta, Ga. | Fox | 133 73 | |
| 45 | George Peczko, Jr | Jersey City, N. J | Own | 132 04 | |
| 46 | Bill Rott, | Jersey City N J | Peczko | 133 73 | |
| 47 | Mary Bissman | Mansfield, Ohio | 1234 | 143 71 | |
| 48 | W. E. Wunderlich | New Orleans, La | Rebel | 140 23 | |
| 49 | Walter Wilson Sr., | St. Louis, Mo. | Flynt | 141 71** | |
| 50 | Charles Flynt, | Belleville, Ill | Flynt | 147 08** | |
| 51 | Carl Franz | Lafayette, Ind | Own | 144 46** | |
| 52 | M. A. Olson | Atlanta Ga. | Fox | Al Rocionals | |
| 53 | John Carlson, | Chicago Ill | Davis | 131 73 | |
| 54 | Richard Daluga, | Harvey Ill | 1234 | No Time | |
| 55 | C. R. Miller, | Columbus Ohio | 1234 | 108 25** | |
| 56 | E. K. Dudley | Atlanta Ga | Fox | No Time | |
| 57 | M. L. Davis | Harvey Ill | C.G.S. | 130 32** | |
| 58 | Leroy Lehner | Youngstown, Ohio | Fox | 140 03** | |
| 59 | Earl Hutton, | California | Fox | 137 20** | |
| 60 | Ed Rogers | Trumbull, Conn. | Fox | 137 10** | |

### Custom Sportsmen

| | | | | | |
|---|---|---|---|---|---|
| 1 | Carl Noward, | Toledo Ohio | 1234 | 120 50 | 130.43 |
| 2 | John Swanson | Silver Springs Md. | Fox | 127 84 | |
| 3 | Leroy Lehner | Youngstown Ohio | 1234 | 127 30 | |
| 4 | Paul Kruse, | Fort Wayne, Ind | Ohe Jaeger | 126 23 | |
| 5 | Earl Oliver | Akron, Ohio | 1234 | 119 21 | |

### Spur Gears

| | | | | | |
|---|---|---|---|---|---|
| 1 | Howard Fox | Bethlehem, Pa. | Borden | 139.63 | 141 77 |
| 2 | William S. More | Bethlehem Pa. | Cofield | 139 53 | 136.57 |
| 3 | Al Winters | Philadelphia, Pa. | Borden | 136.78 | 134 03 |
| 4 | James Petrakis, | Bethlehem, Pa. | Borden | 136 78 | 134 53 |
| 5 | John Cutuli, | Bethlehem, Pa. | Borden | 112 92 | |
| 6 | Paul Schlosser, | Silver Springs, Md | Cabel Kine | No Time | |

### BB Class

| | | | | |
|---|---|---|---|---|
| 1 | Guy Richards, | Akron Ohio | Invader | 116.56 |
| 2 | Don Clark, | Akron, Ohio | Invader | 115 03 |
| 3 | Leroy Lehner, | Youngstown, Ohio | Invader | 115 09 |

*Note: *Indicates tie. **Qualified, but unable to finish*

Carl Franz, Lafayette, Ind., made this Custom Proto himself. Considered meet's most unusual car, no castings were used in the construction. All parts were machined from 17ST aluminum bar stock. It placed 8th.

about a mile (24 laps) to get up speed, but his is ready to be timed after 7 or 8 laps. Got to be quick with the clock.

Time's running out now—two hours to go. Clarence Miller arrived at 4 p.m. with two cars and did what others had tried to do in vain for two days, qualifying them both. Red Davis and his pals (Borden and Daluga) finally arrived and got two cars in. Davis' car had a clever and amazingly simple fuel shut off valve. It was a spring-loaded, pliers-like gadget that simply pinched the fuel line shut when tripped. This smoothed the fuel flow to the engine, eliminating the various right angle channels found in standard systems. Frank Higgins, a fine fellow and good sportsman, had miseries all week on this unfamiliar track, alternately spinning and bogging down the engine with too much traction. In a last, desperate attempt he put on a 2 inch longer bridle, weighted the rear end with lead and did 142.41 to assure a spot.

Probably the most pleasing thing about this hobby is the way all help each other even though each is trying to the utmost to win. Ask a man to help call time on your car as you wait to start the timing mechanism (a very important thing) and he'll try his very best. The very same goes for fuel or parts.

### The Banquet

All rushed to get cleaned up and get back to Linder's Restaurant for the big spread. And it sure was. All ate a wonderful smorgasbord dinner. Regional Championship trophy awarding followed. The ladies were presented with beautiful jewel cases and due credit was given to Bill Cronin who was responsible for most behind-the-scenes good deeds. We then adjourned to the game room to view an excellent movie on racing donated by the Champion Spark Plug Company. Ending the evening was the business meeting. We finally got the question settled as to where the regional qualifiers (qualified at home track in special race) should run—at the top of the stack. The nomination of officers for 1955 then took place with Cronin and Flynt nominated for Pres., Wunderlich for V. Pres. and Noward for Sec.-Treas. Bill Wunderlich then gave us a fine talk on publicity. This man knows, too. Back in the '20s he was a race car driver and Gates stunt pilot.

### The Race

We woke up to see—oh, no—rain! So, we thought, that's all, they'll take the qualifying speeds and call it. But by mid-morning it cleared (99 44/100th % humidity reading) and we actually ran. Needless to say motors were really cooking. Foxy just couldn't get the cackle of pre ignition out of his. Loose discovered that near straight nitro methane with a pinch of oil is OK on average days, but this wasn't average. The 1234 man, Billy Bissman, looked back on those days of overhauling engines (seemed he always had at least two apart at once at the track), sighed and ran what he had stuck together. After all, what's the use. But, lo and behold, if he wasn't one of the very few to improve over his qualifying speed. We began to think maybe those qualifiers who couldn't run their cars in the finals were not so unlucky after all. The dry track fooled many, too.

Henry Hargraves, ably assisted by the City Fire Dept., gave the track a scrubbing that left it like new. That meant no slipping at all and the fellows who normally called their cars by lap counting, which is fine under average conditions, were way early. So they dug out the hard tires for the next heat to get some wheel spin. Larry Macaluso sheared the pin holding the axle. He did the impossible by changing the pin and getting back to the track in 20 minutes. Foxy was sensational with 142 in Spur. This car normally overheats even in ideal conditions, but somehow Foxy conquered this problem and it never sagged. On it went. Everyone was tired and it was becoming apparent speeds would not increase over the first heat. The tie for first would have to be run-off. The rest you know.

Example of Anderson's fine hospitality—the Fire Department came out to help wash down track. View gives good idea of its construction.

# Propeller Layouts Are Simplified With The "PI-BAR"

**By GERALD RITZ**

■ The "Pi-Bar" propeller layout system is the result of an effort to simplify a basic propeller design method to make it easy to lay out a propeller of any blade shape, area, or pitch, with absolute accuracy and without computations or the use of formulae.

Basically, it consists of the pitch relationship projected in scale to the radius of the propeller in inches. Thus this simple scale allows you to draw out the proper blade angles at various points of the blade with no figuring whatsoever.

Directions and a simple explanation for using this system will be given first. Further explanations and pointers for the more persistent will follow.

Cut the "Pi-Bar" scale out and glue it to a piece of 1/16" plywood or its equal and when dry trim to the scale edge. Be careful to use only a thin film of glue so as not to stretch the paper scale from excess wetting.

*Step 1:* Get a sheet of paper and mark off inch measurements along the bottom edge, starting from the right-hand side, and number these 1, 2, 3, etc. These points correspond to the inch radius points on your propeller with the starting point as the center line of your hub.

*Step 2:* Now place the "Pi-Bar" scale on the right side of the sheet with the "0" point on the scale at the hub starting point. Find the number on the scale that corresponds to the pitch you wish to use and mark the edge of the paper at that point. With a rule, draw connecting lines from your inch radius points to this pitch point. This gives you the correct angles that your propeller blades must be given at the various radius points to have the pitch you selected.

From this point in the process you can proceed in several different ways, varying in the amount of effort required and also in the quality of the results obtained.

*Step 3:* The simplest method is to draw out the front view of the propeller blank in the actual size and shape you wish the finished propeller to have, and mark it off in inch radius marks, numbering them from the hub out to correspond with your scale on the bottom of the sheet.

*Step 4:* Measure the width of the blank at each radius point and starting at that same radius point on the bottom of your sheet, mark off this measurement to the right side of this point (on 3" radius, A-B). Now with a square or 90 deg. angle draw a vertical line from this measurement point to intersect with the pitch angle above (B-C). The length of this vertical line B-C is the proper depth for your propeller blank at that radius point. The length of the pitch line (A-C) will be the width of your propeller blade at that point. Finish this operation for all the radius points.

*Step 5:* The next step is to draw out a side view of the propeller blank, making the outline fit the measurements at their proper radius points (on 3" radius, B-C).

With the front and side patterns now completed, it is a simple matter to transfer them to a block of balsa and cut out accordingly.

Be very careful in cutting the blank to cut accurately to the outline, and in carving, to carve to the very corner of the blank, and you will get a perfectly pitched propeller with a finished blade outline.

Keep this pitch layout, as you can use it for other propellers of different shapes and diameters of that same pitch. If this layout is made on graph paper scaled to the inch in 1/16 or 1/20 inch divisions, it will be much easier to do your work accurately.

Now for a little more comprehensive data on the subject. The same relationship exists between the depth and the width of a propeller block at any point as exists between the pitch and "pi" (3.1416) x diameter at same point.

$$\frac{\text{Pitch}}{\pi \text{ diam}} = \frac{\text{Depth}}{\text{Width}}$$

Therefore, knowing the propeller diameter and the pitch we may desire, all we have to do is to lay out the pitch/$\pi$ diameter relationships in geometrical form and from them take off the correct depth/width relationships of the block for any width of blade desired. Transferring these depth and width measurements to the proper place on outline drawings and connecting the points with a curve will give you an accurately pitched propeller layout.

Since we want to lay out angles for only one blade, we will use the radius measurements, so the formula actually becomes

$$\frac{\text{Pitch}}{2\pi \text{ radius}} = \frac{\text{Depth}}{\text{Width.}}$$

Solving further,

$$\frac{\text{Pitch}}{2\ (3.1416)\ \text{radius}}$$

or

$$\frac{\text{Pitch}}{6.2832\ \text{radius}}$$

is the part of the formula we are using. The inch measurement for diameters is practically standard, so we have allocated this scale relationship to the pitch factor. Now since our factor is

$$\frac{1 \times \text{pitch}}{6.2832 \times \text{radius}}$$

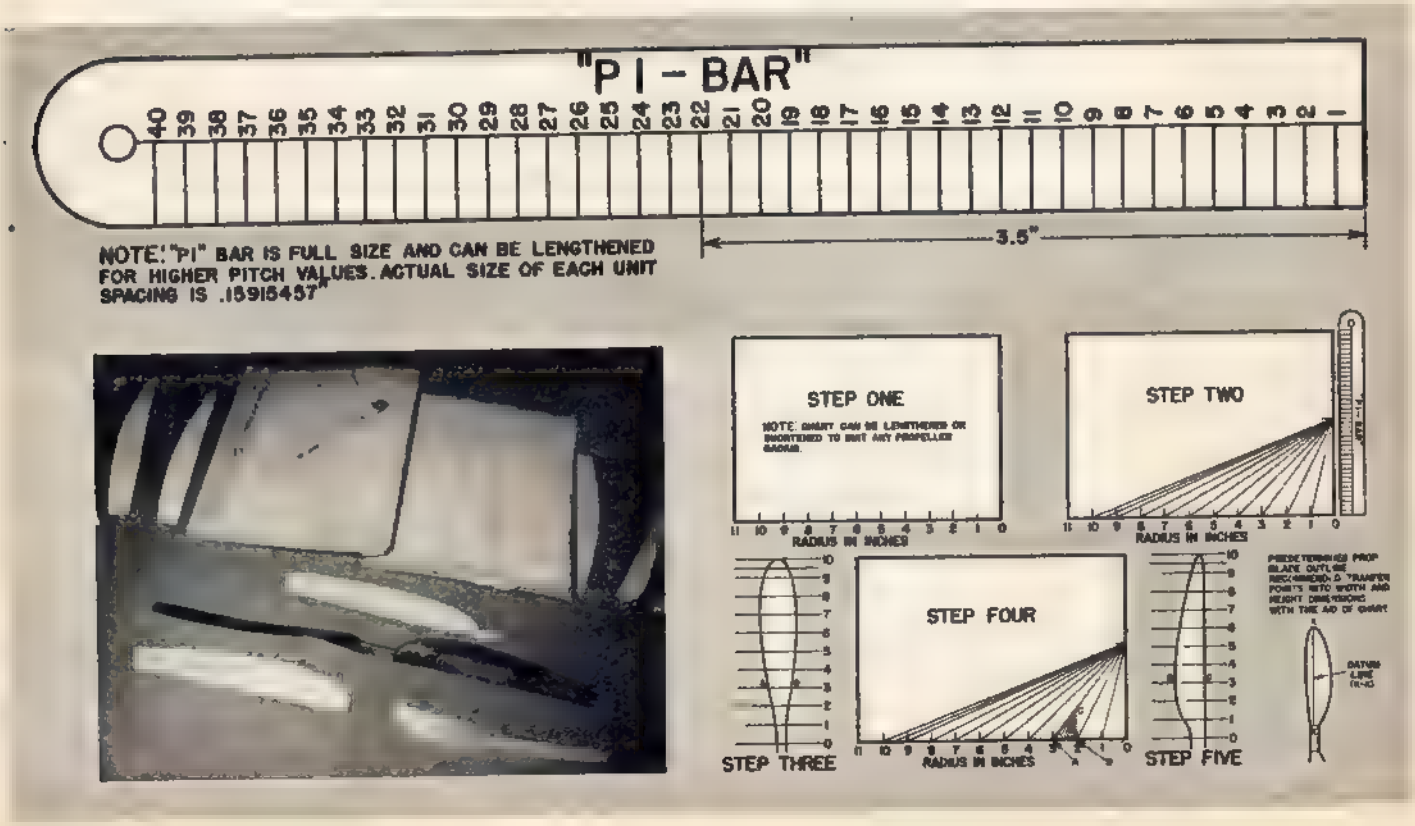
if we use 1" as standard for radius per unit, our scale for pitch will be 1/6.2832" per unit. This measurement is transcribed on the "Pi-Bar" scale.

The preferred method of procedure for layouts is to draw out your actual finished blade shape with the proper amount of area, draw the radius lines on this planform, and transfer the width measurements on the pitch lines. It is a good practice to put a half-inch radius line next to the tip to get more accuracy at this vital point. Vertical lines dropped to the bottom of the sheet will give you both the width and depth of the blank at those points to obtain the desired pitch and finished blade width. Transfer the depth measurements to one planform and the width measurements to another planform and connect the points with a French curve for the final outline.

To lay out your patterns to get the exact blade shape, you will have to work to a datum line (X-X) when transcribing the width and depth measurements. The point where this datum line bisects the blade width will have to be marked on the pitch line and a vertical line dropped from this point also to get the proper split of measurements for the profile of the blank.

Using this system, you can obtain exactly the blade shape you desire, with the maximum area positioned where you want it, you can fit the prop to your fuselage upon folding, etc., merely by starting your operations from the proper point.

The possibilities are many, and if you play around with this system a little to get used to it, you'll never go back to the old "X" block method.



# Last of the Monocoupes

By S. CALHOUN SMITH

**Cal launches his "cover gal" . . . isn't that a pretty sight? You can duplicate this famous lightplane for operation by radio control; take your choice of trike or 2-wheel gear**


■ Airplane model builders have turned out innumerable versions of the Monocoupe since the big airplane first appeared in the early 30's. This fine little ship was a familiar sight around the country's airports prior to World War II. There are quite a few still flying, but the modern trend to four-place aircraft has passed this aircraft over. Last built in 1948, the Monocoupe could boast of very good performance: top speed was 145 mph and cruising speed 135 mph with a Lycoming 115 hp engine.

Monocoupe models have always been fine performers, whether flown rubber or gas. The proportions are good for flying scale types, so why not an R/C version?

The model is scaled at 1¾ in. = 1 ft. Span is 56 in. and length is 37 in. Wing area is 460 sq. in., weight 4 lbs. even, making wing loading 14 oz./100 sq. in. (20 oz./sq. ft.). The K&B .15 engine swinging a 9/4 or 9/3 prop pulls the ship along well, and because of its weight it flies fairly fast, both in climb and glide. There is plenty of speed for good wind penetration. The model is big enough so that a .19 engine could be fitted, though peak .19 power might be a bit hard to trim out. So if you want a real hot bomb use an .19 engine, but hold it back a bit.

There are several departures from scale necessitated by good flight performance. Horizontal tail area is increased, although fin area is scale. Dihedral is 4 deg., which may be increased slightly if the builder desires. The many sleek fairings and struts are omitted for simplicity's sake. Wing struts are only ornaments since wing support is self contained. Airfoil section is a thinned Clark Y 11% thick. Another item that is a builder's choice is the landing gear. Since the scale two wheel gear is pretty long-legged, a tricycle gear was fitted on the original model with good results. If you wish to stick closer to scale use the two-wheel gear and wheel pants.

There are several features used on this model which worked out pretty well in over 50 flights to date. The horizontal and vertical tail are cemented permanently in place. Stabilizer incidence angle is built in and weight is shifted for longitudinal trim. This eliminates any tail shifting with resultant trim changes. The cemented-on tail surfaces have resisted many hard knocks, and only a direct blow from the rear has damaged them.

The wing is tied down on the fuselage top with rubber bands inside the fuselage. This is a bit of extra trouble to construct but makes for a neat appearance. The Monocoupe has large windows overhead in the center section and these are simulated on the model with a sheet of clear plastic hinged at the leading edge. This allows access to tie-down rubbers and permits adjustment of receivers and relay without removing the wing.

Construction is very rugged throughout, and it paid off during many rough early flights, where radio troubles caused spiral dives or fly-aways ended in the treetops. The ship has taken some brutal bumps, but the structure has held together amazingly well.

Fuselage construction follows the "Dagwood sandwich" or "brick church" school of design. Plywood and Weldwood are generously used. Begin by building two open framework sides extending from F2 to F5 of ¼" sq. and ¼" x ½" stock. The plywood doubler is glued to the inside surfaces of the framework sides. Shape of plywood doubler is indicated by the unshaded area on plan side view. These two side assemblies are then joined by the plywood firewall, plywood and balsa formers at F3 and F4. The rear is joined with ¼" x ½" across top and ¼" x 1" across bottom. Corners where firewall and sides meet are gusseted with ½" pine triangular strips. Use Weldwood wherever hardwoods meet and nail or clamp for gluing pressure.

Next add plywood floor from firewall back to F3 and gusset corners. The plywood landing gear mount should be positioned between F3 and F4 according to which landing gear you wish to use. Locate forward for scale gear or rearward for tricycle gear. Before proceeding further with woodwork add some of the hardware to this portion of the fuselage. Torque bar nose gear should be bent to shape and fitted to firewall with eye or "J" bolts. Wing tie-down hooks are fitted to plywood formers F3 and F4. Note that hooks are placed at an angle, so that rubber bands pass over hooks on wing spars located at centerline. The hooks are retained in place with sheet aluminum plates and 2-56 bolts. If receiver is to be mounted on sponge rubber against back of lower F3, hooks for rubber bands will have to be fitted in corners. Landing gear is bolted to plywood floor with 4-40 bolts in holes indicated. A Sigma 4F relay is fastened to a 1" Lord mount located on plywood former F4. The Lord mount can be bolted directly to F4 if desired.

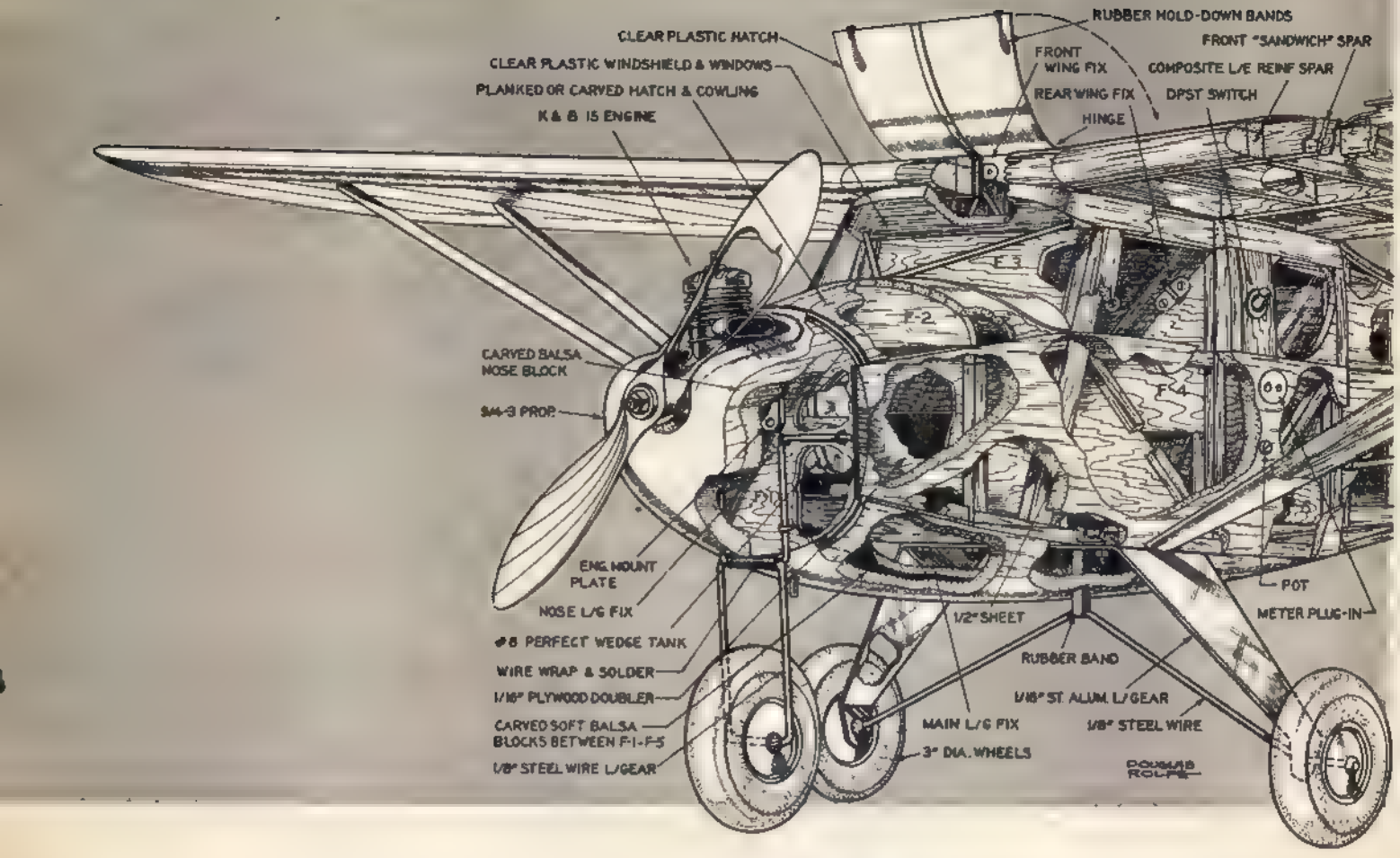
A useful trick is to bolt the Lord mount to a separate plywood panel about 1½" x 3" size. This panel is then retained by a slot in lower edge which goes under a woodscrew head fixed in lower section of F4. Another woodscrew holds top of panel against F4. Top screw is readily accessible for removal of panel with Lord mount and relay attached.

The rear section of fuselage behind F5 is built as a separate unit and then joined to front part. Layout sides on ⅛" sheet. Add cross pieces from F5 back to tail. No cross sections are given for these parts since the structure is rectangular. Take cross piece sizes directly from fuselage top view. Next add vertical strips on inside behind each cross piece. Lightening holes can be cut between formers in sides if desired. The ⅛" sq. and ⅛" x ¼" stringers can now be added to outside of structure. Note ⅛" sheet fill-in at lower corner behind F5 and under stabilizer. Small ¼" sheet wedges are added at extreme rear inside.

Rear section of fuselage is joined to front part now. Make sure that mating faces at F5 are smooth. Add ⅛" sheet joiners inside the four corners across F5. These are long diamond shaped pieces shown in exploded view and on top view of plan.

Plywood escapement bulkhead and bellcrank mount can be assembled and fitted at F5. The bellcrank is fiber or plastic with strip of brass riveted to front end. Wire drive yoke is soldered to brass plate. Pushrod is a length of 1/16" dia. wire with bicycle spoke and nipple end for adjustment. Make latch of spring wire for connection to rudder horn.

To complete construction of fuselage woodwork add hardwood strips across back of firewall for engine mount screws. Spot cement nose block in place and rough carve. Add bottom




blocks from F1 to F3 and F3 to F5. The sides are covered with ½" sheet outer layer back to F5 below window line. Another layer of ¼" x ½" strip goes over the outer sides of window frames and fuselage top at F3, F4 and F5. The insides of ¼" x ½" fuselage top strip get another layer of ¼" x ½" strip between F3, F4 and F5. Cement ½" sheet corner gussets at F3 and F4 flush with top. The removable hatch on top behind firewall can be built up or carved from block, as can the section below windshield forming the instrument panel. Front of cabin top under wing leading edge is ¼" sheet.

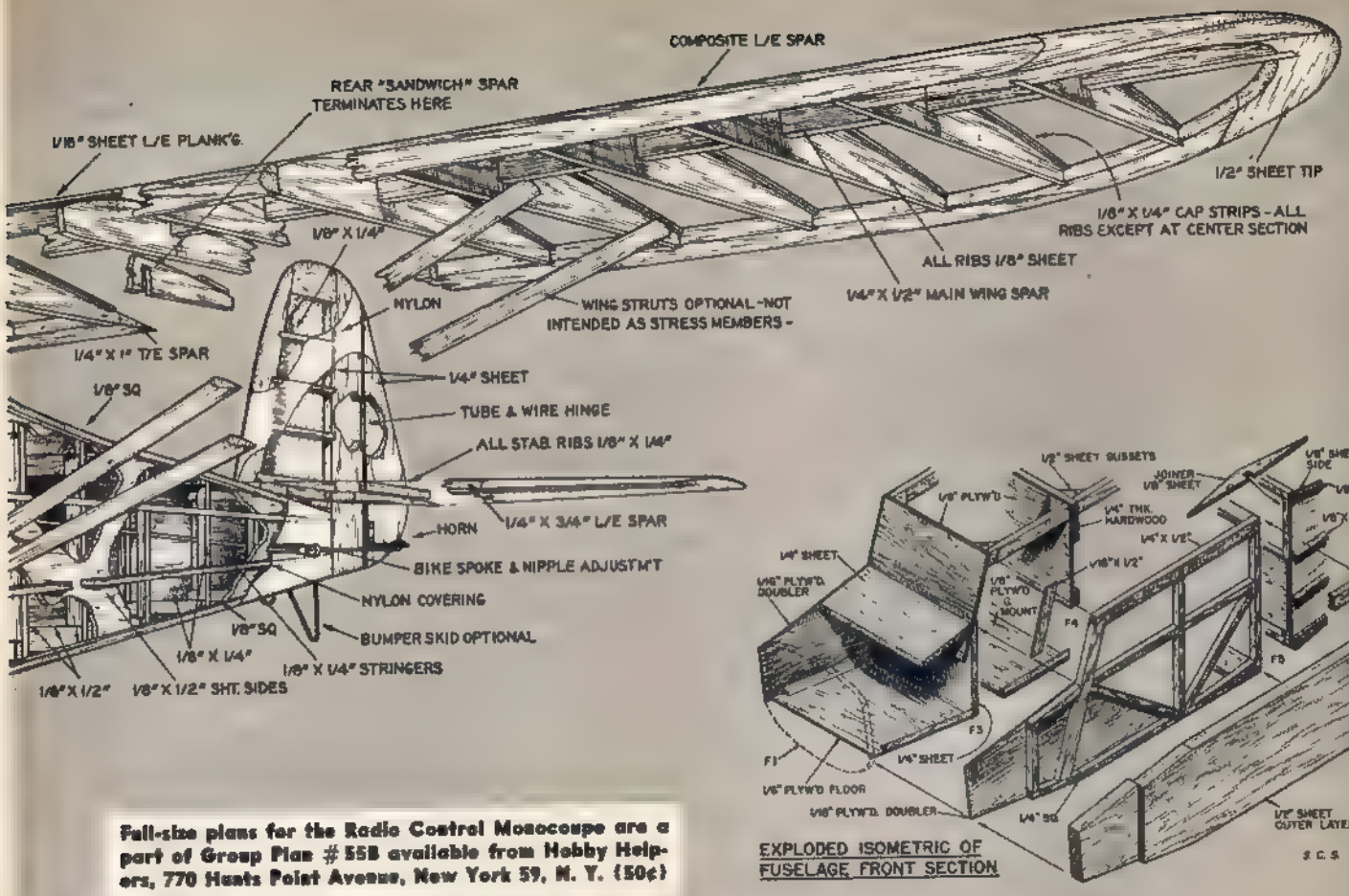
Now carve the cabin and nose section to final shape, refer to top side views and cross sections. This whole area is well curved so work slowly to get a good symmetrical shape, fairing smoothly into stringered section of afterbody. Sand smooth and apply clear dope to harden surface while work proceeds on other parts. Add windshield cut from pattern given. Side windows are covered with flat sheet from F3 to F5.

Tail surfaces are all flat stock so they can be built directly over plans. Trailing edge of stabilizer is 3/16" thick so block up 1/32". Sand ribs and trailing edge to symmetrical section. Assemble tail surfaces to fuselage after covering.

Wing construction is standard except for sandwich spars which serve two purposes. Considerable strength was needed here to bridge large opening in center section and tie-down hooks needed good firm base for fastening. Anchor hooks to face of spars with aluminum plate and small woodscrews in same manner as hooks on fuselage formers. The ½" wide strip behind leading edge can be cut to same angle as front plywood spar and should be one piece all the way across. Leading edge stock will have to break at center section.

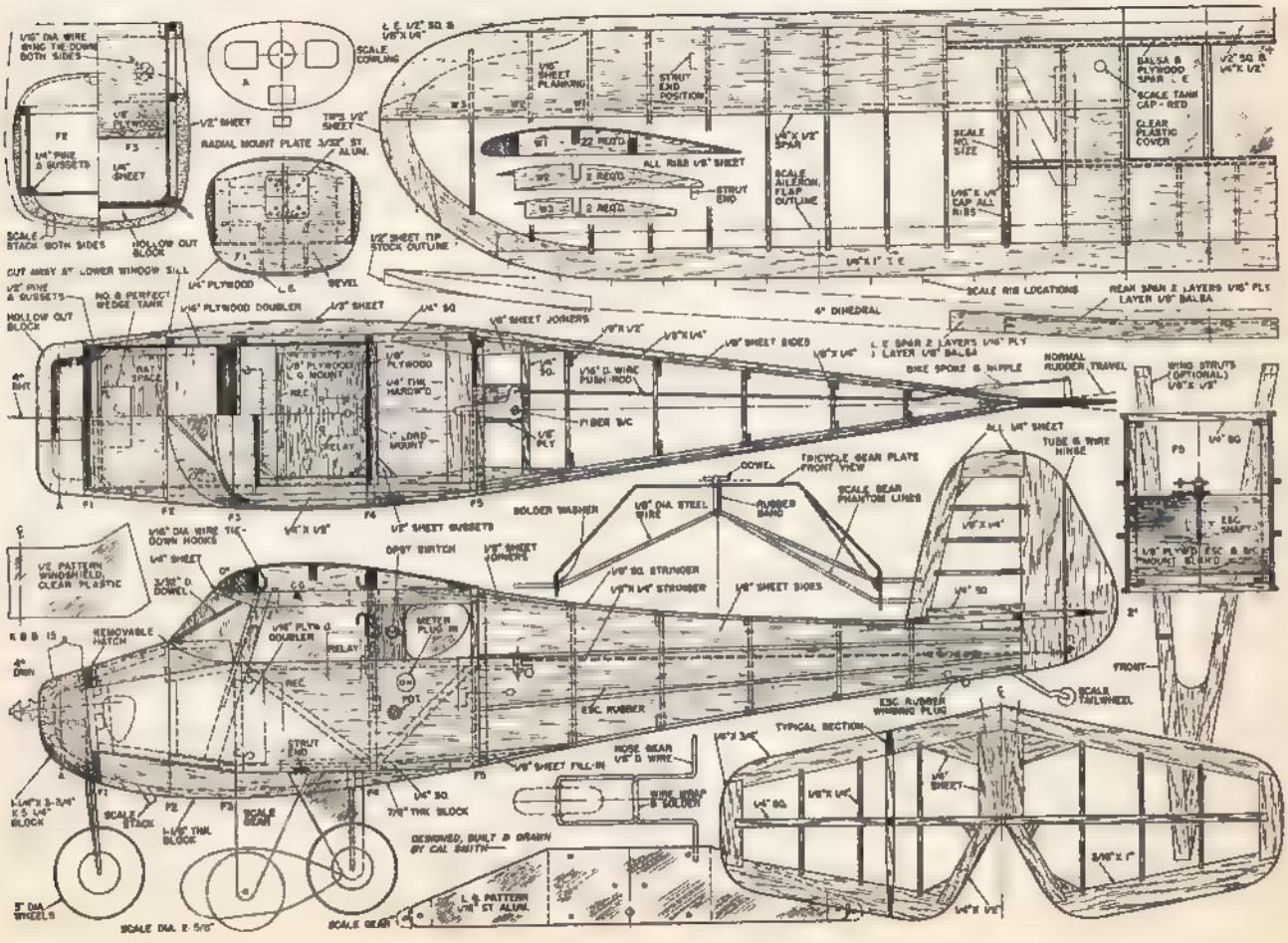
All surfaces that will touch covering are sanded smooth and given two coats of clear dope. Use fuel proof dopes throughout. Cover with nylon. The original ship was given three coats of clear and three coats of colored dope. Color is cream with red trim, and follows the scale markings closely. Naturally you may vary this color scheme as desired.

The original model has been flying (*Continued on page 92*)




EXPLODED ISOMETRIC OF FUSELAGE FRONT SECTION

**Full-size plans for the Radio Control Monocoupe are a part of Group Plan # 558 available from Hobby Helpers, 770 Hunts Point Avenue, New York 59, N. Y. (50¢)**



# Radio Control Plane Kits

■ There's no doubt about it—the quickest way to get an R/C modelplane into the air is to build it from a kit. Even many of the expert model designers do this, for it enables them to spend a lot more time on equipment, receivers and so on. The beginner to R/C flying is strongly advised to construct a kit plane for his first attempt at this form of flying, even though he may be experienced in other forms of model flying.

With more and more kit planes reaching the market, the prospective builder may be a bit bewildered as to what he wants to tackle. Moreover, if he is not situated near a hobby shop, he can't go in and look over the various offerings. We feel that the information given here will enable him to get a good idea of what kit will fit his needs, which one will best fit the radio equipment he might already have, what engines are needed and so on.

We have tried to pick from the specs and plans of the various kit planes enough information to give a general idea of the type of construction in each model; experienced flyers can get an idea of probable performance by checking such factors as wing area, weight, recommended engines, type of stab airfoil, length of fuselage. We have included brief notes on construction of each plane, along with the special features of each. If you analyze this data carefully, and study the photos of the models, as shown in the ads, you can form a pretty good idea of what *your* next kit R/C plane should be.

The makers are listed alphabetically; planes of each maker are tabulated according to wingspan. Engine size ranges give limits beyond which maker feels you should not go; lightplanes with light radio installations will do fine with the smallest engines listed, but if you beef up the ship and use a lot of batteries and apparatus, you will probably have to go to the upper limit.

Wheels are furnished in only a very few cases, but all of the kits have bent or formed landing gear parts, and hardware is generally included. Covering provided in most cases is paper, with heavy grades provided for the large planes. Plans of many kits include detailed radio installation data, in some cases covering the apparatus of several makers.

Wing construction refers to number of spars used; where "one double spar" is listed, it means two smaller spars located on top and bottom surfaces, not filled in between them. In such cases, the leading and trailing edges are usually extra heavy.

"Cabin area" shows the full size of a solid block that could be inserted into the cabin space through the opening provided. In some planes, notably the Royal Rudderbug, actual cabin space is much larger than that shown; dimensions show size block that will go through hatch doors. In every plane, of course, there are other areas in nose of plane and to rear of cabin that can be used for batteries, escapements, actuators, etc. Plans usually show where all radio control parts should go, to obtain correct balance.

"Max. plane weight" shows what plane will weigh, ready for free flight operation—that is, equipped with engine, tank, wheels, etc., but no radio apparatus; in a few cases, this column shows total weight of plane.

Much of the data shown was supplied by the manufacturers although considerable research and checking went into this compilation.

Because of the unavailability of some kits at the time this data was compiled, the following will not be found in the chart: Berkeley Cessna 170, 72" span, 2" to foot flying scale, for engines from .25 to .35; Berkeley "Sea-Cat" amphibian, 68" span, for engines from .15 to .25; Sterling Tri-Pacer, 58¾" span, 504 sq. in. wing area, flying scale, tricycle gear, for .15 to .35 engines; Cleveland Luscombe, flying scale, 76" span; Miniature's Rearwin Speedster, high-wing, 56" span; Springfield Ryan N-Y-P, 41" span; Sterling Cessna 180, 45" span, 30" fuselage, for Half-A or Class A engines, flying scale.

In the chart under "Engine Size and Mount," "U" means upright mounting of motor; "S" means side mount; "I" means inverted. Because a majority of the manufacturers supplied no information on the wing section used, no data on airfoils is included. Most kit designers develop their own sections after extensive testing; few are standard airfoils.

### Special Features of Individual Planes

*Brigadier.* RC-38; polydihedral wing. Three rubber wheels included. Fuselage longerons 5/32" sq. Plans show size and mounting of PAA-Load dummy.

*Helioplane.* Full span flaps may be fitted—fully detailed on plans. Rubber L.G. wheels furnished. Scale copy of Army liaison plane. Plans show both upright and side-mounted engines.

*Bootstraps.* Polydihedral wing. Plans show PAA-Load modifications. Entire nose section with motor and nose wheel held to rest of fuselage with rubber bands. 3/16" sq. longerons behind cabin, lower longerons from back of cabin forward are 3/16" x 1¼" sheet balsa. Three rubber wheels furnished. Entire radio section with batteries removable from bottom of fuselage.

*Royal Rudderbug.* Follows design and construction of Good's larger Bug very closely but cabin and nose area are considerably strengthened. Ship is just 5/6 the size of famous older brother. Four engine installations shown. Kit approved by Dr. Walter Good.

*L. W. Kitten.* Rubber wheels furnished. Because of small size, does not have removable radio compartment as do other Live Wire models. Engine mounts on firewall, is entirely uncowled. Most of fuselage sides and entire bottom sheet balsa covered. Sheet dural landing gear. 3/32" sheet fin and rudder.

*L. W. Trainer.* Formed dural L. G. Most of fuselage sides and all underside are balsa-sheeted. Built-up sheet balsa covered fin. Entire R/C unit with all batteries and escapement is removable through top of fuselage.

*L. W. Senior.* Features about same as Trainer; relatively thicker stab. airfoil.

*L. W. Cruiser.* Follows size and design of L. W. Senior quite closely, but has longer nose, more rounded lines throughout. Other L. W. designs use wing tip washout, but Cruiser has "spoiler strips" to give good stall characteristics. Full data shown for movable elevators. Highly detailed separate plan sheet shows many different radio installations, including multi-channel. Both two- and three-wheel L. G. shown.

*Beam.* Entire fuselage is sheet covered. Fin and rudder are sheet balsa.

*Electra.* Fuselage entirely of balsa sheet, as is fin and rudder. Smaller engines almost entirely cowled-in. Single-strut, rubber-sprung L. G.

*Buzzer'd.* Die-cut sheet balsa "crutch" runs full length of fuselage. Double-strut L. G. held on with rubber bands. Plans show various pressure tank and 2-speed fuel installations.

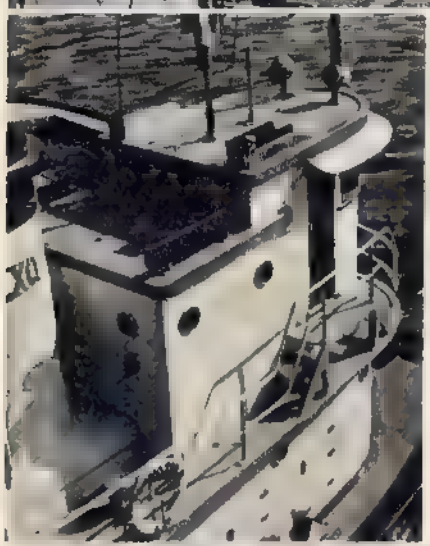
*Flying Ohm.* Full length balsa sides on fuselage. Engine is entirely uncowled. Wheels mounted relatively far back from nose for ease of ROG. Alum. engine mount suggested.

*Tri-Pacer.* Scale copy of large Piper plane. Fuselage has built-up framework, is entirely sheet-covered. Kit has pressed metal cowl for front of nose. Nose wheel L. G. wire has "safety pin" loop for shock absorbing action. V-struts have easy knock-off fittings. Fin and stab cemented firmly to fuselage

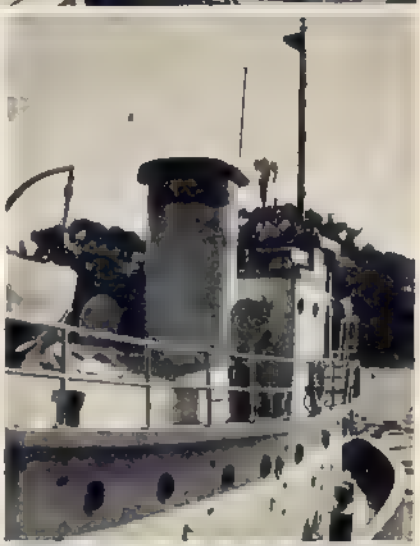
| Kit Name | Span In. | Area sq. in. | Max. chord | Under Camber | L. E. Sheeted | Trail. Edge | Wing Const. | Tips | Stab Span | Stab Max. Chord | Stab Airfoil | Engine Size & Mount. | L. G. Type | Wheel Size | Max. Plane Wt. -oz. | Equip. Wt. -oz. | Cabin Area | CG to Nose | CG to Tail | Made by: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brigadier RC-38 | 38 | 207 | 5¾ | no | no | triang. | 1 doub. spar | sh't | 14½ | 5⅜ | thin lifting | 035-099 U | trike | 1½ | 7 | 9 | 5½x3¾ x1¾ | 6½ | 19½ | Berkeley |
| Helioplane | 38¾ | 230 | 6 | no | yes— T only | flaps | 2 spars | bl'k | 18¾ | 3½ | sym. | 035-15 U & S | 2 wh. | 1¾ | 8 | 9 | 4½x4¼ x2¾ | 7¼ | 21½ | Berkeley |
| Boot-straps | 54 | 350 | 7¼ | yes | no | triang. | 1 doub. spar | bl'k | 21½ | 6 | semi-lifting | 09-15S | trike | 1½ & 1⅞ | 21 | 14 | 6¾x4¾ x3 | 11 | 26½ | Berkeley |
| Royal Rud-der-Bug | 62 | 600 | 10 | no | no | triang. & sh't | 2 spars | bl'k | 23 | 8 | sym. | 14-23 U & I | trike | 2¾ | | | 5x5x3¾ | 8¾ | 32½ | Berkeley |
| Super-Brigadier | 58 | 460 | 8¾ | no | no | triang. | 1 doub. spar. | sh't | 21 | 8¼ | lifting | 19-36U | 2 wh. | 2½ | 29 | 7 | 4¾x5¾ x3¼ | 8 | 29 | Berkeley |
| Buccaneer Special | 72 | 754 | 13 | yes | Top only | sheet | 1 doub. spar | sh't | 26½ | 12 | thin lifting | 45-65U | 2 wh. | 3½ | 52 | | 12x7x3¼ | 14 | 40 | Berkeley |
| Super Bucca-eer | 90 | 1195 | 14 | yes | no | sheet | 2 doub. spars | sh't | 29 | 13 | thin lifting | 60-1.20 U | 2 wh. | 4⅜ | 80 | 24 | 13x8½ x3½ | 16 | 42 | Berkeley |
| L. W. Kitten | 34 | 220 | 6½ | no | no | triang. | 1 spar | sh't | 15 | 4½ | lifting | 049U | 2 wh. | 1⅜ | 8 | 10 | 6½x3¾ x2¼ | 6½ | 19 | deBolt |
| L. W. Trainer | 48 | 432 | 9 | no | yes— T & B | sheet T & B | 1 doub. spar | sh't | 20 | 6 | sym. | 09U | 2 wh. | 2½ | 35 total | | 8½x5½ x4 | 9 | 23¾ | deBolt |
| L. W. Senior | 65 | 750 | 12 | no | yes T & B | sheet T & B | 1 doub. spar | sh't | 27½ | 8½ | thick sym. | 19-23U | 2 wh. | 3 | 40 | 56 | 8½x7x4 | 12 | 32 | deBolt |
| L. W. Cruiser | 65½ | 775 | 12 | [illegible] | yes— T & B | sheet T & B | 1 doub. spar | sh't | 27¾ | 8½ | thick sym. | 19-23I | 2 or 3 | 3 or 3 & 2½ | 48 | 40 | 8½x6¾ x3½ | 12½ | 31½ | deBolt |
| Beam | 50¼ | 372 | 8¼ | [illegible] | Top only | sheet | 2 spars | sh't | 21½ | 7¼ | flat | 09-15I | trike | 2 | 36 total | | 7¾x7¼ x3¼ | 8 | 26 | Guillow |
| Electra | 45½ | 300 | 7 | no | On top only | triang. | 2 spars | bl'k | 18¼ | 5 | lifting | 049-09S | 2 wh. | 2¼ | 36 total | | 6¾x3¾ x2⅞ | 7 | 21 | Jasco |
| Buzzer'd | 72 | 720 | 10¾ | no | no | triang. | 11 spars | sh't | 30 | 8 | lifting | 19-35U | 2 wh. | 3 | 35 | 16 | 9¾x6¼ x3⅝ | 10¾ | 30 | Kenhi |
| Taylor-craft | 108 | 1584 | | | | | | | | | | 99; twins; 4 cyl. | 2 wh. | | 96 | 60-72 | 9½ wide 10½ high | | | Miniature |
| Flying Ohm | 46½ | 320 | 7¼ | no | no | triang. | 2 spars | sh't | 23 | 7 | flat | 09-15U | 2 wh. | 3 | 38 total | | 5½x5x 2¼ | 12 | 24 | Morgan |
| Tri-Pacer | 58¾ | 504 | 10½ | no | no | triang. | 2 spars | sh't | 28 | 9 | sym. | 15-35U | trike | 2¾ | | | 9x6½x 4¾ | 11½ | 28½ | Sterling |

Bob Crab's 6' all-hardwood runabout with 5-channel surplus drone R/C unit converted to rudder-throttle control; 2½ hp Johnson outboard engine modified for inboard installation. Built in '29 by Al Woods.

# The Wonderful World Of Model Power Boating

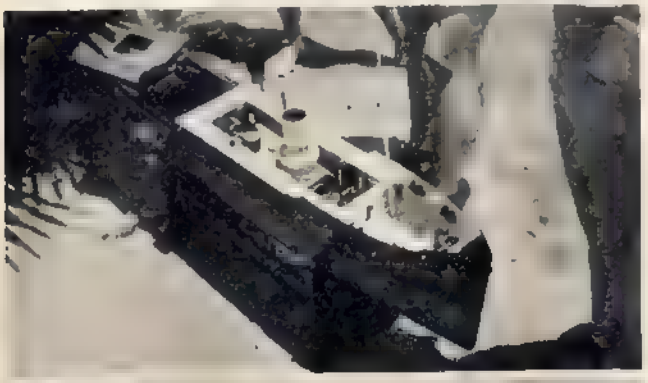


Radio controlled steam-powered tugboat model, "Consultor II," is owned by H. C. Free and Ed DeGear. Clockwise in photos by Dick Everett starting from upper left: Mr. Free preparing to fire up steam engine after removing superstructure; escape valve blows off steam while operator adjusts blow torch which provides heat for the boiler—see steam whistle at top of stack; looking forward along starboard side—tug took nearly 2 years in building; 135 pounds of miniature tugboat gets underway—whistle is radio controlled; close-up of 2-cylinder engine, uses water from lake; Rockwood 5-channel receiver installed in upper deck which hooks into hull through one electrical plug—milliameter in pilot house, switch turns off radio. Model is 6 feet long. Its owners belong to San Francisco Model Yacht Club.

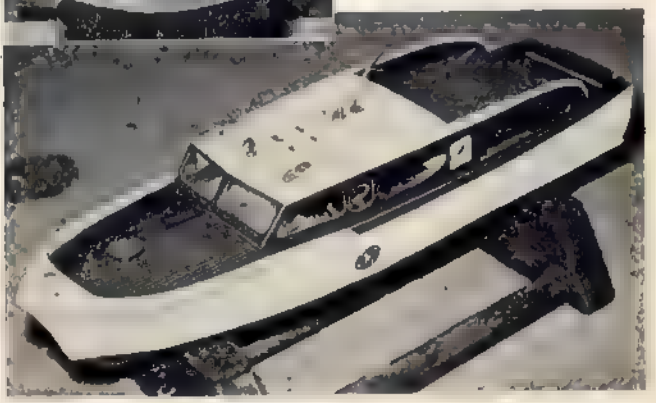


They're not cool, man—they're hot! Francis X. Gruber, Albany, N. Y. (386 2nd St.) designed and built these awesome affairs. Light-colored one is powered by a single Dyna-Jet; the other has two D-J's! Called "Nottinss Special," 4' long, 22" wide and 14" high at the fin. Weight is 20 pounds. We're awaiting the running reports.

Excellent craftsmanship and perfect realism are shown in these two photos of 58" model of a Salvage Tub built by Lowell Lamb of Southern California Model Power Boat & Yacht Association. Powered by steam, boat is controlled by radio. (These photos by Bill Baughman. "Anna I" and Chris-Craft Catalina shots by Dick Everett, author of ATH's well-known Western Roundup column.)



Art Ellsworth's Chris-Craft from Sterling kit; 22 coats of Dulux hand rubbed; exhaust port scavenges water from cooling system; plastic tubing (rt. side) is from water pickup which circulates through copper tubing wound around Mac .19; Macnabb 27 revr; ED clockwork escp. "Own" fittings.



Virgil Gustavino and his "Anna I". Cedar PT hull design, original mahogany superstructure. Forster "99" power, water-cooled, homemade R/C. The overall length of this craft is 52 inches.

Charles Hering, West Los Angeles, built this model of 125 foot diesel engine powered yacht. Recently completed, this 31 inch miniature is powered by 7-pole permanent magnet motor which runs off wet cell batteries. Could be mistaken for the real thing.

James Stribling (right) prepares to launch his boat at the start of a "marathon race." Idea is to "free run" your boat around basin or lake while you, the contestant, attempt to keep up on foot with craft. Boats usually win; Jim was victor this time.

### MODEL POWER BOAT RECORDS

**Officially Recognized by the International Model Power Boat Association**

| Class | Name & Club | Speed (mph) | Engine |
|---|---|---|---|
| A | Max Biederman, N.Y.C. | 69.23 | Original |
| B | Charles Watkins, Chicago | 81.81 | Original |
| C | Walt MacWilliams, Phila. | 81.44 | Dooling 60 |
| D | William King, Toronto | 84.90 | McCoy 60 |
| E | Ralph Richards, Phila. | 84.50 | McCoy 60 |
| F | Charles Baxmann, Detroit | 63.82 | McCoy 29 |

Here's a convenient way to start small boats submitted by the versatile Bill Baughman of Los Angeles. If you're tired of trying to hold the boat yourself, or getting someone else to do so when you start the engine, build up a holder similar to this one. Protected with an old inner tube, boat is held snug while the starting cord is used. Boxes shown, war surplus ammo cases, work fine.

Class C (15 c.c.) 30¼" racing boat built by Walt Mac Williams, Phila. MPBC. Engine is rebuilt oversize glow-plugged Dooling with home-made piston, bored-out cylinder liner. World's record holder at 81.44. Beam, 10¼" across sponsons.

Max Biederman of N. Y. Model Knights owns world record Class A which set mark of 69.23 mph. Boat and engine both by Max. Motor is 2-cycle, disc rotary valve, glow plug ignition.

Class E (10 c.c.) by Ralph Richards of Phila. Power is stock McCoy .60, glow plug. Same hull design-size as MacWilliams', laid out by Harry Traband. Holds record at 84.50.



Working subs by Eugene V. Bunnell, Vallejo, Calif., are both rubber powered (5' long, dives 5', travels for 300', 40 lbs.) and electric

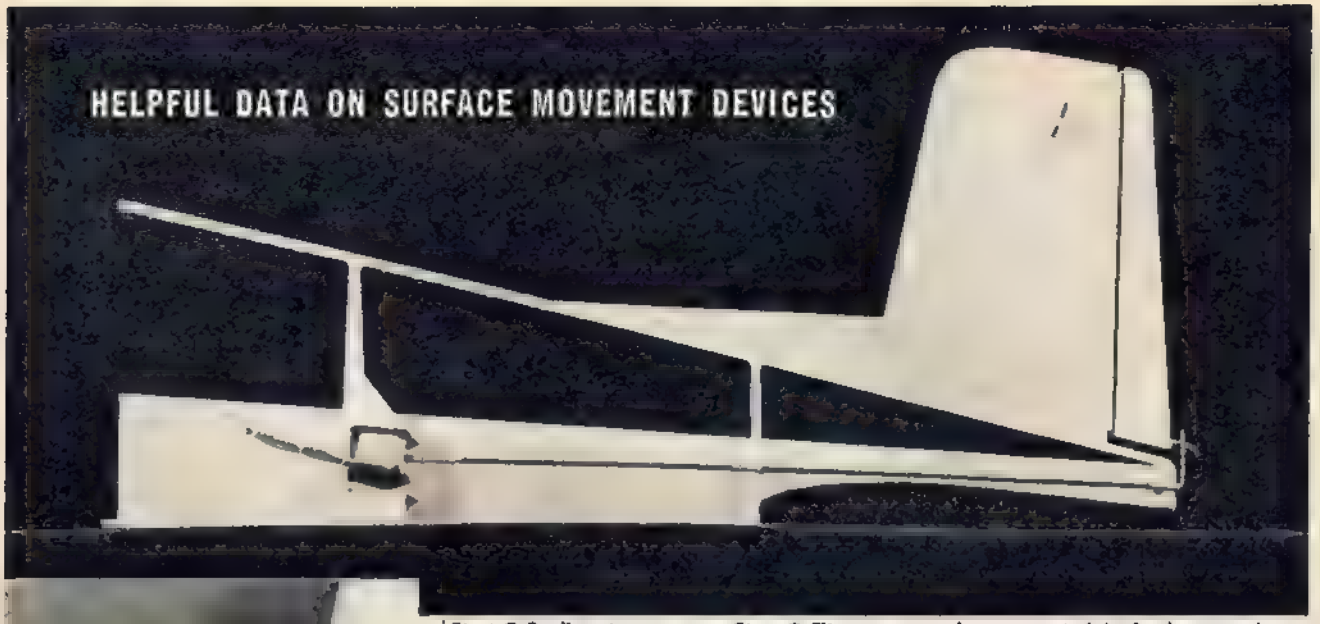
powered R/C (7'4" long, 4½" wide, 6" high, 65 lbs.). 1/20 hp motor works two 4' bronze props at 80 rpm, 12 knots.

Cameron Clan's retrieving system: younger brother Butch, fishing rod & reel, small cloth bag with rubber ball for weight.

Les Stormer of Southern California Model Power Boat & Yacht Assoc. adjusting gas powered R/C cruiser for run at Alondra Park Lake, Los Angeles. Very complete in detail, operates well; uses underwater scoop for water-cooling engine.

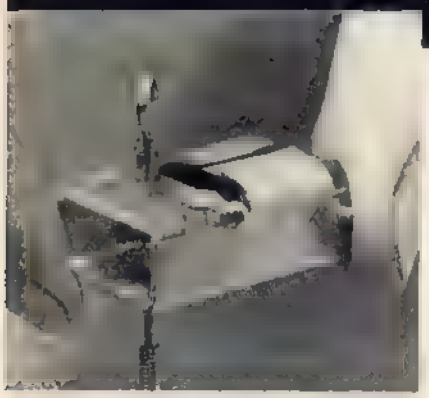
No, it's not a full-sized freighter traveling along on a calm sea—it's a beautiful 30 inch model of a small freighter built by Lowell Lamb of SCMPB&YA. Job is free running type; detail is very complete; power is steam engine which blows steam out the miniature stack giving illusion of real smoke (which can be seen faintly in the photo here by Bill Baughman).

Charles Watkins, Chicago, with Class E entry at Toronto. Horizontally mounted motor. All speed pix here by Bob Graham.

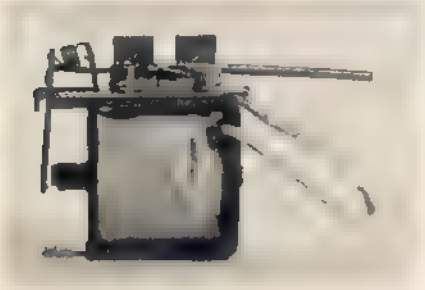


Strat-O-Seal's rotary magnet Strat-O-Flite actuator shown mounted in fuselage mockup.

# RADIO CONTROL EQUIPMENT



E.C.C. Telecommander's escapement.



Ace Radio Control's hi-resistance actuator.

"Rite-Controller"; pulsequence or proport.

■ Today the escapement is still the most widely used surface mover, but various forms of proportional control are catching on fast. Just to get our terminology straight, let's jot down the names of some of these units, and then discuss them at more length. While we're at it, we'll include the control boxes used at transmitter for the various systems.

*Escapement*—generally considered to be a sequence-operating device; to get control movement, you have to go through a set sequence of positions, such as left — neutral — right — neutral — left — etc. Usually the power to move the surfaces comes from a twisted rubber band, and this power is controlled by an electrical magnet, which in turn, is controlled by the receiver.

*Actuator*—an electro-magnetic device utilized to move the surfaces in proportional control systems. Most of them have a rotating permanent magnet, with some sort of electrical winding to move it.

*Servo*—These are usually electric motor-driven units, with a gear reduction system to increase power and reduce speed of the operating arm. Often fitted with limit switches, which open the motor circuit at predetermined points either side of center. May also have centering switches to return the control arm to neutral when the signal is cut off.

*Keyers and Pulsers*—control boxes attached to the transmitter, which send the correct length and spaced pulses to actuate proportional control equipment in the model.

*Beep Box*—an automatic switching device connected to the transmitter which sends the necessary pulses to work an escapement in the model. Even though the escapement may require full sequence operation, the Beep Box allows the operator to get successive right or left turns in any number he wishes.

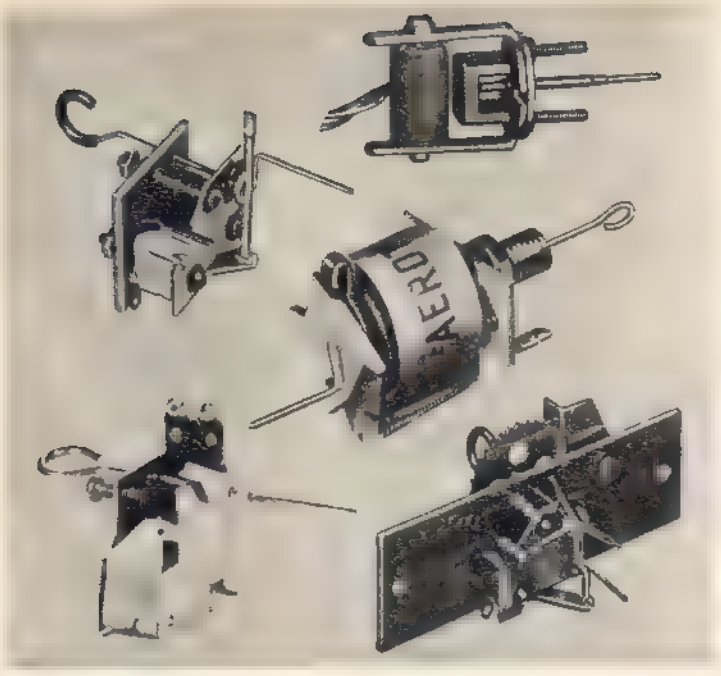
Not so many years ago, things were very simple; almost every model was fitted with an escapement, and the only control in wide use at the transmitter was a plain pushbutton. Things have really progressed since then! Below is a quick rundown of the various new types of equipment that you can purchase today; it will be seen that there is no longer a sharp dividing line between the different sorts of mechanisms.

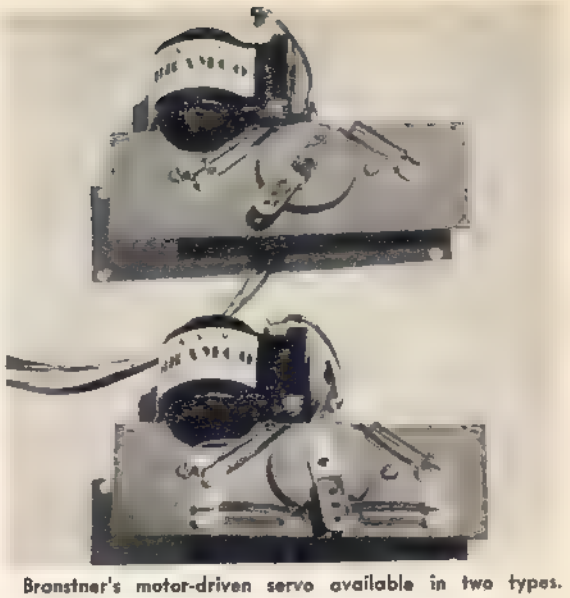
**Escapements.** You can no longer visualize these units as something to which you must attach a rubber band. We now have them powered by clockwork and also by electric motors; the latter, incidentally, are called "servos" by the maker, further confusing things! The deBolt "Multi-Servos" are really electric-motor driven escapements, and are made in four types as seen in the chart.

The traditional type of strictly sequence escapement is still in wide use, and is the lowest-cost style to be had. Most of them have two control positions and two neutrals, and you have to hold the signal on as long as you want the control surface to be held off center. This is considered a safety feature in some ways, since if your model gets out of range the control surface returns to—or stays in—neutral. This type of escapement is generally called a two-arm type.

Three and four-arm escapement have been used, but are not widely popular, and only a few of the latter are sold at present.

The first commercially available escapement that removed the sequence requirement was the Bonner Compound, with which you can get any number of rights or lefts at will; the surface is always centered when the signal is cut off. This unit offers another feature—a third position in which a set of electrical contacts is closed, allowing a very simple





Bronstner's motor-driven servo available in two types.

Clockwise from lower left: Citizen-Ship PSN escp.; Bonner's Standard escp.; Adams rotary magnet actuator; Berkeley's Super Aerotrol escp.; Bonner's Compound escp.

means of working a second escapement for elevator or other auxiliary control action.

It is interesting to note that the Dmeco Model 3PN affords the same features—that is, two rudder control positions, plus a set of contacts that may be closed at will, to work another control.

Several multiple-type escapements have been marketed which can control two surfaces, such as rudder and elevator; they require close attention to the proper number and spacing of pulses and are usually utilized with a special switch at the transmitter. The ECCO Multi-Position escapement is an example; it has two control shafts that may be linked to rudder and elevator, but uses only a single rubber band for both surfaces.

**Actuators.** There are two forms of proportional control in use: one—which we usually term "semi-proportional"—allows only left, right and neutral control positions; full proportional allows the operator to have any control position he wants, from full right to full left. No sequence is involved in either, of course. The equipment in the model is the same for either, the difference being at the transmitter control box, or pulser.

Proportional actuators may be of several types, the most widely used being fitted with a shaft-mounted permanent magnet, which is caused to move by one or more electrical windings. Again, the most widely used type has no other iron in it besides the magnet itself (and possibly the shaft); this type is available from several concerns and is, in some cases, very inexpensive. One example of the "iron pole" style of actuator on the market is that made by Adams.

Some actuators have only a single winding, and require two sets of batteries to get right and left deflection. Others have dual or center-tapped windings, which can give the same results with a single battery. In both cases, a receiver relay with single-pole double-throw contacts is usually required. Even this latter is not universal, though, for certain actuators are made to pull only one way, the return motion being obtained from a spring of some sort. The Flyball actuator is an example of this design.

The Ace High Resistance actuator is connected right into the plate circuit of the receiver tube, thus eliminating the sensitive relay and also the power supply needed for the normal low resistance actuator.

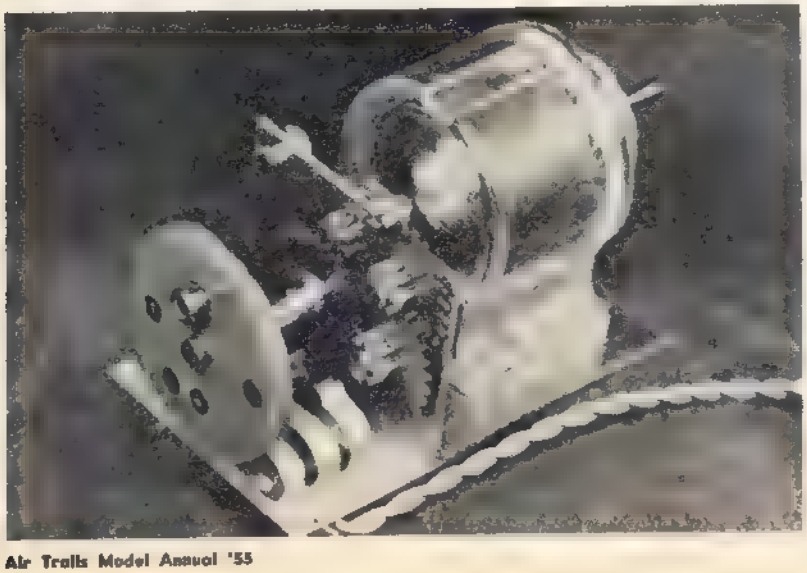
Also in this field is the Fenners-Pike actuator, an electric motor-driven unit which has a means incorporated for obtaining a second control action, when wanted. Both controls may be worked at the same time. As with other styles of electric-motor-driven mechanisms, this one has considerably more pull than the strictly magnetic type.

**Servos.** Servos on the market are powered by small electric motors. Some are fitted with limit and centering switches, others are not. In general, the units with both limit and centering switches have been used for elevator control, while those with only limit switches work the rudder. Limit switches are always fitted, however, as they open the circuit when the control arm reaches an extreme position off-center, and so prevent jamming of the gearing; connections are such that opposite rudder (or elevator) will always bring the surface back to center.

Lately, more and more flyers are using what is called "trimmable elevator," which means simply that the elevator stays where the operator puts it and does not automatically go back to center when the control signal is cut off. This system is a lot harder to learn to fly properly, but offers much more flexibility in aerobatics, flying in the wind, and so on.

The Bonner servo, which is specified

Dmeco (deBolt Model Engineering Co.) 3PN Multi-Servo; one of four versions.



Here: Polk's motorized centrifugal Flyball actuator.

Rockwood Radio Control's motor-operated servo.

and sold with the Babcock multi-control system, has no limit or centering switches; the latter are not required, since the makers advise the use of a trimmable elevator. Limiting is handled by mechanical stops and a slipping clutch in the drive gearing; when either limit position is reached, the operating arm stops moving, but the motor continues to turn.

**Keyers and Pulsers.** These are made in three main types, the relay type, the electronic and the mechanical. All have their own pros and cons. The relay types do not require any tubes, and many of them are little more than a relay, an electrolytic condenser and a variable resistor. A source of high voltage is required, sometimes tapped off the transmitter B battery. Current drain is quite low and small batteries of 45 V. or so may be carried in the same case. Chief disadvantage of this type is that the pulse speed varies as the pulse length is altered—a condition that is troublesome in some cases and not in others.

The electronic pulsers have one or more vacuum tubes, and hence require both A and B power. They are somewhat more flexible than the relay type, and usually the speed and spacing of the pulses may be varied quite independently of each other. With miniature battery tubes, power requirements are low and all the batteries may be put in the pulser case. A relay is always used to connect the pulsing circuit to the transmitter.

The mechanical type is felt by many to be the most reliable, but is the toughest to make and often quite noisy. An electric motor is geared (or belted) to a set of rotating contacts, with a control lever arranged so that the pulses may be varied in spacing. Since battery motors are normally fitted, quite good life may be had from flashlight cells, and these are sometimes carried in the pulser case. The PRC-100, Stanco and Fenners-Pike are good examples of this type.

One other motor-driven unit should be mentioned, the Rite-Control Pulsequence box, which affords both rudder and elevator operation on the model; a single 2-arm escapement is all that is needed in the plane, but since it is stepped around continuously, it must be fitted with a long rubber band. Rudder and elevator may be applied separately or together and in any degree and combination.

The control box comes with an extra contact plate, which when installed allows it to be used as a regular proportional pulser.

Some manufacturers have adapted various sorts of rotary switches for transmitter control. The ECCO dual escapement is stepped through its paces by such a switch, and Gyro lists a Beep Box, which is a rotary switch so made that it can be turned in only one direction, and will step a regular 2-arm escapement around to the desired control positions as fast as you can turn it.

To our knowledge, there are no motor-driven Beep Boxes on the market, though a few custom-made jobs may be had.

From the above it may be seen that the complexity of control equipment is increasing. Enterprising builders combine various of the units mentioned above and in the chart, to get all sorts of special arrangements. Of course, many of the units we have presented are equally useful for boat and other model purposes; for such use, the electric motor-driven equipment is preferred, due to the greater force needed to move boat rudders or car wheels.

### ACTUATORS

| Maker | Model | Type | Wt. oz. | Dimensions | Rec. V. | Ma. at 3 V. | Remarks |
|---|---|---|---|---|---|---|---|
| Ace Radio Control | High Res. | Armature extension | 2 | 1 ⅜x1 ¼x1 ⅜ | | | Used in plate circuit of rec. tube 10,000 ohm, coil 2.3-ma. or higher. |
| M.S. Adams | | Rotary magnet | 1.9 | 1⅝x1 ⅝x1 | 3–6 | 100 | Polepiece type. Uses single battery |
| Polk's | Fenners-Pike | Motor-driven | 2.65 | 2⅝x1 ⅛x1 ⅜ | 3 | *** | Follows control stick exactly. Extra control always available. |
| Polk's | Fly-ball | Motor-driven | 2.95 | 4⅜x1 ⅝x1 ½ | 3–6 | *** | Motor-driven centrifugal design, very powerful pull. |
| Southwestern R/C Supply | | Rotary magnet | 1.7 | 1⅛x1 ⅛x1 | 3–9 | 50 | Two coils allow many different connections and current drains. |
| Strat-O-Seal Mfg. Co. | Strat-O-Flite | Rotary magnet | ½ | 1⅜x ⅜x ⅝ | 1½–3 | 350 | Requires two separate batteries. |

***Current depends somewhat upon load or pulse-rate.

### SERVOS

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Brunsteer Co. | | Motor-driven | 2.5 | 3 ⅛x2 ⅛x1 | 3 | *** | Has limit switches, comes with or without centering switches. |
| Bonner Spec. | | Motor-driven | 3 | 3⅛x1 ⅛x1 ⅛ | 3 | *** | No switches; mechanical limiting, no centering action. |
| Rockwood Radio Cont. | | Motor-driven | 1⅝ | | 3 | *** | Has limit and centering switches. May be had less latter |
| Schmidt Radio Cont. | CMR5 | Motor-driven | 1.9 | 2⅜x1 5/16x1 | 3 | *** | Has limit and centering switches. May be had less latter. |

***Current depends somewhat upon load or pulse-rate.

### ESCAPEMENTS

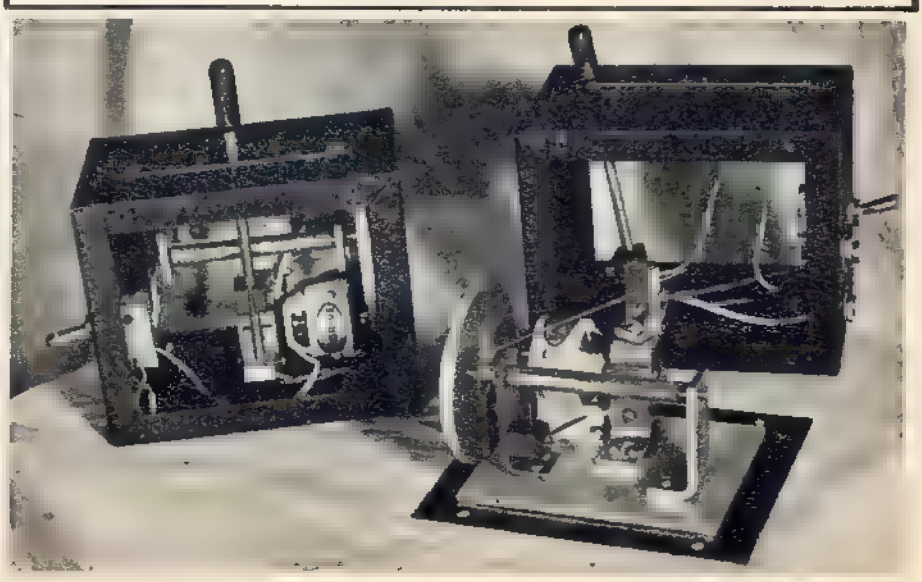
| Maker | Model | Type | Wt. oz. | Dimensions | Rec. V. | Ma. at 3 V. | Remarks |
|---|---|---|---|---|---|---|---|
| Bonner Spec. | Standard | 2-arm SN* | .5 | 1 ⅜x1 ⅜x1 | 3 | 450 | |
| Bonner Spec. | Compound | 4-pos. | .8 | 3x1 ⅜x1 ⅛ | 3 | 400 | One neutral, no sequence, closes contacts in 3rd position. |
| Bonner Spec. | Motor Cont. | 2-pos. | .8 | 1 ⅜x1 ⅜x1 ⅜ | 3 | 450 | For use with twin needle valves. |
| Citizen-Ship | PSN | 2-arm SN | .62 | ⅜x ⅜x ⅜ | 1½–3 | 400 | |
| dmeco** | 2PN | | 1.9 | 2 ⅛x1 ⅜x ¼ | 1½ | 500*** | Motor-driven, 2 pos., self-neut., no sequence. |
| dmeco** | 3PN | | 1.9 | | 1½ | 500*** | Same, 3 pos., closes contacts in 3rd. No sequence. |
| dmeco** | 2P2N | | 1.9 | | 1½ | 500*** | Same, 2 control positions and 2 neutrals. Sequence operation. |
| dmeco** | 3P | | 1½ | | 1½ | 500*** | Same, 3 pos., no neutral. |
| E. C. C. | No. 202 | 2 arm SN | ¼ | 1x ⅝x ½ | 3 | 1200 | Extremely compact. |
| E. D. | Clockwork | 2 or 4 | 2.75 | 3 ⅜x1 ⅜x1 ⅜ | 4½ | 300 | Driven by clockwork spring. Can be used as either 2 or 4 arm type. |
| E. D. | Current Saver | 2-arm SN | .85 | 2 ⅛x1 ⅜x ⅜ | 4½ | 150–250 | Double coils and contacts — pulls in at high current, holds at low |
| ECCO Mfg. Co. | Multi | Special | 2 | 3x2 ⅜x1 | 4½–6 | 1100 at 4½ V | Has two shafts for rudder and elev. |
| RCH | | 2-arm SN | | | | | |
| Berkeley Models, Inc. | Super Aerotrol | 2-arm SN | 1.3 | 1x1x1 | 3–4½ | 200 | Mounts with single hole only |

*Self-neutralising
**These units are called "Servos", are included here since they give same action as escapements.
***Current depends upon load, also setting of "brake."

### PULSERS, KEYERS, BEEP BOXES

| Maker | Model | Type | Dimensions* | Voltage | Remarks |
|---|---|---|---|---|---|
| Curtis Machine Products Co. | PRC-100 | Mechanical** | 6 ⅛x2 ⅝x2 | 3, self-contained | Uses two D cells. Strong bakelite case, has button for escapement use. |
| ECCO Mfg. Co. | Ground Controller | Rotary switch | 4 ⅜x3 ⅛x1 | None | Must be turned counter-clockwise only. No power required to operate. |
| Polk's | Fenners-Pike | Mechanical** | 3 ⅜x2x1 ⅜ | 3 | Very compact. Has rheostat, also button to change motor speed rapidly |
| Gyro Elect. | Beep Box | Rotary switch | 2 ⅛x2 ⅛x1 ⅛ | None | Compact hand-operated switch. Can be turned only in correct direction. Used to key transmitter for self-neut. escapements. |
| Rite-Control | Rite-Controller | Mechanical** | 3x4x5 | 3, self-contained | Uses two D cells. May be adapted for either "Pulsequence" or normal proportional operation. |
| Southwestern R/C Supply | | Relay | | | Relay style, controlled by variable resistor |
| Stanco Manufacturers | | Mechanical** | 3x4x5 | 3 | Split drum type pulser; drum is belt-driven. |

*Less knobs, levers, etc.
**Driven by electric motor



Stanco split drum belt drive mech. pulser.

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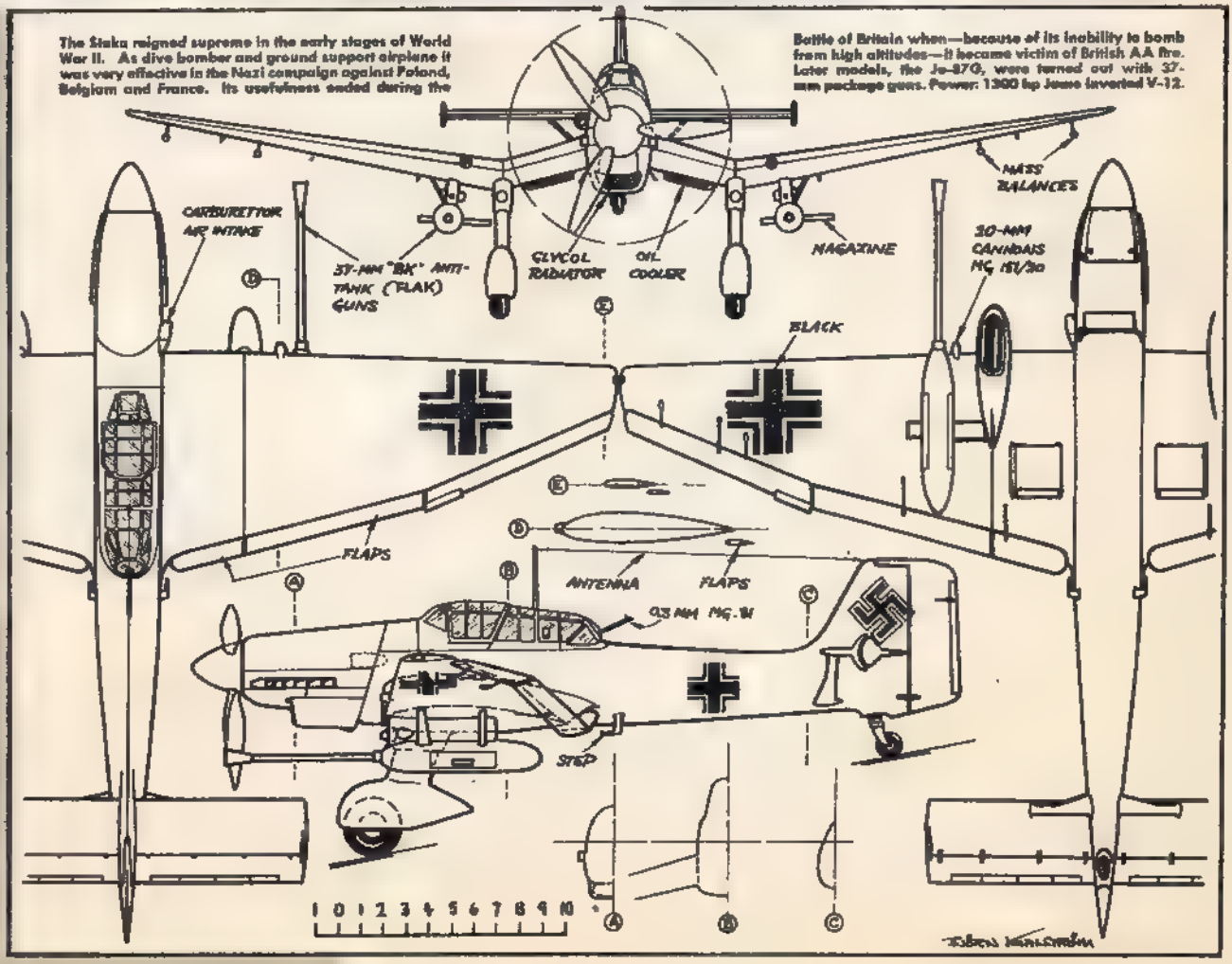

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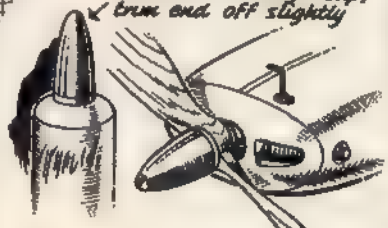
# Hints 'n Kinks

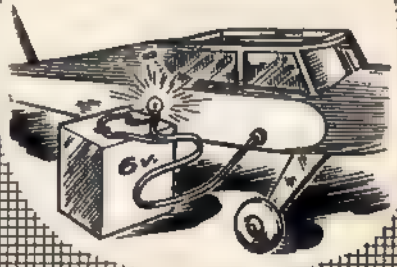
*Dural firewall plate as firm base for thrust adjustment washers in radially-mounted engine of freeflight gassie*


*Drill hole through cap, trim end off slightly*

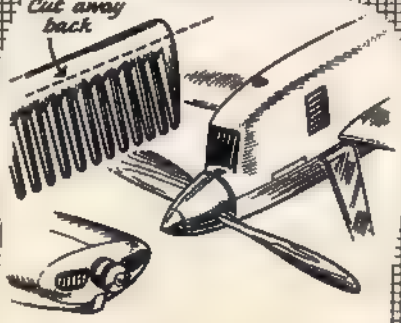


*Great variety in shapes of plastic nail polish caps includes some suitable for A/2 engine spinners*

*One-man R/C distance check made by plugging in 6v. battery & bulb in series through relay contacts... check at night; bulb visible up to 3/4 mile distance on signal*

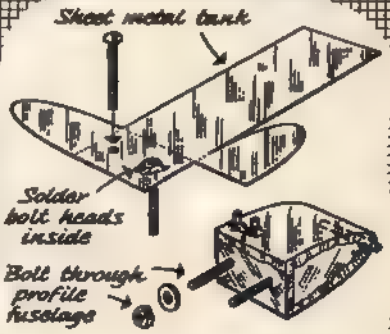



*Cut away back*

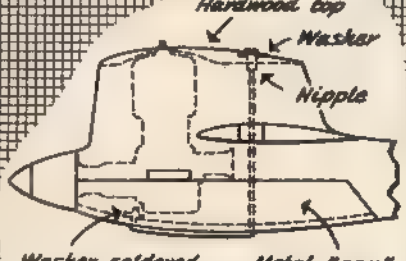


*Sections cut from combs make realistic grills for cowl openings. Ideal for team racers, stunt & scale models of all sizes*

*Sheet metal tank*




*Simple, trouble-free tank mounting for profile control-line models*




*Bicycle spoke can serve as belly skid & hold-down fitting for speed models*

# Analysis of Top Model Aero Winners (Cont.) —National Championships of 1954

(Continued from page 46)

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Combat | J1 | William Trevisan Detroit | 540 | • W.36-288 built up. S:90 solid. Bo·19 profile. Silk covered. 3C colored, 2C clear Aero Gloss. Fox .35; F:O&R #4; Champion VG2; Ba·Eveready #6; Pr:Power 10/6 H·Darwin |
| | J2 | Enrique Macias Mexico | 500 | |
| | J3 | Bill Nagel Tonica, Ill. | 460 | • "All American" kit, no lg. Silkspan covered. 8C STA. K&B .29; F:K&B 100, Pl."OK"; Ba:Ray-O-Vac; Pr:Tornado 9/7; H:E-Z Just. |
| | S1 | Shirley Ann Austin Kirkwood, Mo. | 860 | • Flew 2 flying wing models after spectator damaged 1st. #1 W 34-304 NACA 0012. CG 30% Tissue covered. 3C Aero Gloss clear. 19 oz. B.14.5. R:3 deg. K&B .33; F:Cheminol; Pl·O&R, Ba: wet cell, Pr:Tornado 9/7; H·Hot Rock. #2 model similar except: 18 oz. F:Nitro-X; Pl: Champion; Pr:Top Flite 10/8; H.E-Z Just. |
| | S2 | Richard Rowley Racine, Wisc. | 540 | • "Ring Master" with 1 section removed from each tip. 5C clear, 3C color Speed-O-Lac. Fox .35; F:Testors; Pl.Champion; Ba·Burgess #6, Pr:Tornado 9/7; H:E-Z Just. |
| | S3 | William Asher Hammond, Ind. | 520 | • "All American Junior." 8C Aero Gloss. Fox .35 bypass & crankshaft opened & polished; F: original, Pl·Champion; Ba Eveready #6, Pr·Tornado 9/7, H E-Z Just. |
| | O1 | Frank Adams New Albany, Ind. | 540 | • W.30-210 symm. sheet balsa. S:50 sheet. R:2. Bo·21.5 balsa & ply. CG 25% 23 oz. Aero Gloss K&B .35, Pl Champion; Ba·Bright Star; Pr Power 10/6, H E-Z Just |
| | O2 | William White Kewanee, Ill. | 340 | • W 38-418 built-up l.e. & t.e. with cap strips. Bo 27 slab sides & bottom planking on top. Silk covered 10C STA. 26 oz. Fox .35 pressure system reworked ports. F·Testors 39; Pl·Champion, Pr:Top Flite 10/6. |
| | O3 | Arthur Cangialosi Clifton, N.J. | 140 | • W 36-332 15% symm. built up. S.21, 1/8" sheet. Bo 25 sheet box. CG 25%. 20 oz. Silkspan covered 4C Ateco aircraft dope. Fox .35; F:Supersonic 100; Pl·Champion VG2; Ba:Burgess; Pr:Top Flite 9/8; H:E-Z Just |
| Navy Carrier | J1 | Robert Heminway AudubonPark,N.J. | 363 | • W 38-200 built up symm. Bo.28. S symm. 38 oz. Silkspan covered. 6C STA. K&B 35, F:Power Mist; Pl·Champion; Ba:Great Lakes; Pr·Tornado 10/6; H E-Z Just |
| | J2 | Richard Moldovan Lorain, Ohio | 360.3 | • Sterling Corsair. Silkspan covered. 10C Aero Gloss. Atwood Triumph .49, F:Thimble Drome, Pl:Champion VG2; Ba: Eveready, Pr:Top Flite 10/8; H E-Z Just. |
| | J3 | Bob Wanenmacher Cleveland | 307 | • Grumman Guardian. W 27.5-128 sparless. S 32 sheet. Bo 22 block. R·18. 21 oz. Tissue covered. 4C Aero Gloss. Fox .35; F.K&B 1000, Pl Champion, Pr Rite Pitch 4/6. |
| | S1 | Dave Domizi Rocky River, Ohio | 417.4 | • W·28-125 semi-symm. sparless. S 30 symm. sheet. Bo 30 crutch & block. R:15. CG15%. 21 oz. Silk covering. 10C butyrate. Fox .35; F:Chemirol XL-2, Pl Cheminol; Ba·Eveready, Pr:Top-Flite 9/7; H:Sullivan |
| | S2 | John Barr Westchester, Ill. | 358.4 | • Same as S2 Control Line Flying Scale. |
| | S3 | Hill Hutchins, Jr. Spartanburg, S.C. | 322.5 | • Berkeley kit & AT plan. 12C Aero Gloss. Fox .39, F·Power Mist, Pl:Champion VG2; Ba· Willard; Pr:Top Flite 11/6. |
| | O1 | W. F. Netzeband, Jr. | 385.5 | • Much modified Convair Sea Dart. W.36-396 built up NACA 0009 root NACA 0012 tip. Bo:20 partly fibre glass. CG 42% root chord. 4C plasticized nitrate 3C butyrate. Tissue covered. Fox .35 compression raised to 9:1 intake extension choke for 2-speed; F.Thimble Drome racing; Pl:· Cheminol KS-3; Ba:wet cell; Pr:Y&O 10/7; H:original from control stick head with gun trigger sw for 2-speed. |
| | O2 | A/2c Bob Lutker Ft. Worth, Texas | 361.1 | • Miniature Aircraft Stearman scaled down slightly. Silkspan covered. 6C Aero Gloss. Anderson Spitfire .65 additional needle valve, F:Testors 39; Pl Champion VG1; B.Burgess; Pr Top Flite 18/8 |
| | O3 | Tom Andrus | 332.9 | • Original. 8C Aero Gloss. Super Cyclone .60 balanced & 10:1 compression ratio. F Supersonic 100; Pl:Champion V2; Pr:Power 10/9. |

(Continued on page 78)

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Deluxe 108 pc. Scale Model Fittings. Set B-11F.... $7.50

**Other Sterling Radio Control Models**

CHRIS-CRAFT 32' CRUISER Kit B-6M ..... $9.95
Deluxe 34 pc. Scale Marine Fittings, Set B-6F. . $3.50
CHRIS-CRAFT 50' CATALINA Kit B-7M .. $11.95
Deluxe 66 pc. Scale Marine Fittings, Set B-7F .. $4.95
CENTURY SEA MAID '20' Kit B-8M .. . $7.95
Deluxe 35 pc. Scale Marine Fittings, Set B-8F . $3.95
HARCO '40' DELUXE CABIN CRUISER
Kit B-10M ..... $10.95
Deluxe 64 pc. Scale Marine Fittings, Set B-10F . ... $4.50
CHRIS-CRAFT MONTEREY (for outboard engines), fittings included. Kit B-13M..... ..$5.95


## SEA DART *Plastic*

3-Point Outboard Hydroplane
A speed demon in action!
Length 16" Beam 6½"
Kit B-12 ..... $3.95

## SCALE MODEL BOATS

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HIGGINS 17' SPEEDSTER Kit B-2 ..... $4.95
CHRIS-CRAFT 47' BUCCANEER Kit B-3..... $7.95
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## R. C. Piper TRI-PACER

### Designed especially for RADIO CONTROL!

Completely prefabbed to scale from factory plans it's the world's first scale model plane designed especially for radio control. Ideal for sport free flight and control line flying.

Span 58¾", Length 39½". For Class A, B, & C Engines
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## Chance-Vought CORSAIR F4U-1

### Scale Control Line Model

Authentic replica of the world-famous U.S. Navy carrier-fighter!
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The last word in stunt combat flying thrills!
Span 42" For Class B & C Engines
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Kit S-2 . . . . . $2.95
YAK-9
Kit S-3 ..... $2.95
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Kit S-4 ..... $2.25
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Kit S-5 ..... $1.95

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## Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Free Flight Half A | J1 | Darryl Katz Detroit | 914 | • Fu-Bar 36. 3C Berryloid 1C Aero Gloss. Spitfire .049, F:Thimble Drome racing & Hellz Fyre; Pl:Spitfire; Ba:Eveready; Pr:Power 6/3. |
| | J2 | William Wing Ann Arbor, Mich. | 822.2 | • W:40.5-22multi spar. S·95 flat-bottom multispar. R·10. CG ½" behind t.e. 7.5 oz. Bo.30 built up including pylon. Silkspan covered. 4C Berry Bros. butyrate. Thermal Hopper .049; F:Thimble Drome racing; Pl:Thimble Drome; Ba:Homart & Eveready; Pr:Tornado 6/4. Rt-rt pattern. |
| | J3 | Martin Wolff Downey, Cal. | 788.6 | • Modified A/2 Spacer. 5C dope. Tissue covered. Rt-lt pattern. Cox .049 hopped up; F:Thimble Drome racing; Pl:Cox; Ba:Burgess #6; Pr·K&B 6/3. |
| | S1 | Bradford Broadwell Long Beach, Cal. | 893.2 | • Modified Spacer. Tissue and silk covered. 5C dope. Atwood .049; F:Hellz Fyre, Pl:K&B; Pr: K&B 6/3. |
| | S2 | Robert Sutton Topeka, Kan. | 893 | • Spacer with turbulator strips, 2 wheel gear. Skysail tissue. 2C nitrate dope 1C Aero Gloss. Atwood .049 ported, plated & polished inside; F:K&B 1000; Pl:K&B; Pr. 5.5/4. |
| | S3 | Donald Wolfe Galien, Mich. | 881.4 | • Kiwi silk covered. 3C Testors. Wasp. .049; F:K&B 100; Pl: Wasp; Ba: Eveready; Pr:Top Flite 6/3. |
| | O1 | Gabriel Martinez | 1063.3 | • Kiwi added stab area, shortened moment arm, modified fuselage. Tissue covered. 3-4C dope. Atwood .049; F:O&R#2; Pl:K&B; Pr·Power 5.25/4. |
| | O2 | Allen Johnson Birmingham | 973 | • Modified "Apache" tissue covered oB:Modified 4C butyrate. Atwood .049; F:Cheminol AA; Pl·Atwood; Pr:Power 6/3. |
| | O3 | F. L. Swaney Long Beach, Cal. | 940 | • Spacer tissue covered. 5C India butyrate. Space Bug .049; F:Thimble Drome racing; Pl: Thimble Drome; Ba:General; Pr:K&B 6/3. |
| Free Flight—Cl. A | J1 | Tom Stafford Columbia City, Ind. | 830 | • A-B Spacer. 5C STA. K&B .19; F:Testors 39; Pl:K&B; Ba:Wards; Pr.Tornado 9/4. |
| | J2 | Paul Paine Windsor, Ont. | 735.6 | • Kiwi with 1/16" planked pylon. Skysail covered. 7C Berryloid. K&B .15; F:K&B 1000; Pl:K&B; Ba.General; Pr: Top Flite 8/3.5. |
| | J3 | Joseph White Sacramento | 655.5 | • W.60-567 undercambered 2 spar. S:290 3 spar. Bo·52 Warren truss high sheet cabin. 24 oz. CG 107% Rt-rt pattern. R:38. Tissue covered. 5C butyrate. Dry ice dethermalizer. Torp .19; F:Gold Seal A/2; Pl:Champion; Pr:Tornado 9/4. |
| | S1 | Bob Gelvin Topeka | 961 | • A-B Spacer. 3C Testors nitrate. Skysail covered. Torp .19 F:Supersonic 1000; Pl.Torpedo; Ba:Burgess; Pr.Top Flite 10/3.5. |
| | S2 | Bradford Broadwell Long Beach, Cal. | 873.6 | • Spacer with multi-spar, thinned-out fuselage. Tissue & silk covered. 5C aircraft dope. K&B .19;F:K&B 100; Pl:Champion; Ba·Bell Tel; Pr:Y&O 9/5. |
| | S3 | Jack Sheffer Portland, Ind. | 858.4 | • W:65-570 undercamber rib and spar S:thin flat bottom. R:20 20.5 oz. Rt-rt pattern. 8C Aero Gloss. Silkspan covered. K&B .19; F:K&B 1000; Pl:Champion; Ba:Eveready; Pr:Tornado 10/4. |
| | O1 | Jack Oxley Long Beach, Cal. | 999 | • Spacer A-B. Tissue covered. 5C dope. Torp .19; F:Cheminol; Pl.O&R; Pr:Y&O 9/5. |
| | O2 | Robert Wheeler Columbus, O. | 967 | • W:56-445 NACA 6409 multispar sheeted l.e. S:156 multispar Clark Y 09% Rt:32. 20.2 oz. CG 72% Silk covered. 3C nitrate 2C Aero Gloss. K&B 19; F.K&B 1000; Pl:K&B; Pr:Tornado 9/4. Straight-lt pattern. |
| | O3 | Sal Taibi Lakewood, Cal. | 886.2 | •Spacer. Skysail covered. 6C nitrate. Rt-lt pattern. Torp .19; F:O&R #2; Ba:Burgess #6; Pr:Top Flite 9/4. |

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REMOTE CONTROL THROTTLE

**COMPLETE KIT INCLUDES**

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# Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Free Flight—Cl. B | J1 | David Brownlee Stone Mtn., Ga | 631 | • Spacer silk covered 5C Testors K&B .23; F original; Pl:Cheminol, Ba:Willard; Pr Top Flite 9/4. |
| | J2 | Joseph White Sacramento | 527.7 | • W 60-567 undercambered 2-spar. S:290 3 spar thin flat bottom. Bo 52 Warren truss high sheet pylon 24 oz CG 107%. R 38 Rt-rt pattern Tissue covered 5C butyrate |
| | J3 | Richard Heist, Jr Ft. Worth | 526.6 | • Modified Perfidio Rt-rt pattern. Tissue covered 8C nitrate & butyrate. Torp .29; F.K&B 1000; Pl:Champion; Pr:Top Flite 9/6. |
| | S1 | Robert Cherny | 996.8 | |
| | S2 | Bradford Broadwell Long Beach, Cal. | 935 | • W 84-953 multi spar S-408 multi spar Bo 52 planked R-35 CG 85% Rt.rt pattern 34 oz Tissue & silk covered 5C aircraft dope. K&B .29 reworked, F Helizfyre; Pl-Champion; Ba- Bell Tel; Pr:Y&O 10/5. |
| | S3 | Samuel Golden | 808.7 | |
| | O1 | Earl Anderson South Bend, Ind. | 1072.2 | • W 62 Bo-36.5. 29 oz R-twin Rt-lt pattern Silk covered. 2C dope Ohlson .23; F:Nitro-X; Pl:Spitfire; Ba:Burgess; Pr.Top Flite 9/6 |
| | O2 | John Pfeifer Lansing, Mich. | 1049.8 | • "AT" Davis Hogan Silk covered 6C Brite-Flite. 32 oz. CG 90%. Torp. 29; F:Supersonic 1000; Pl.Torp, Ba Ray-O-Vac; Pr:Power 10/6. |
| | O3 | Chet Orrill Meriden, Conn. | 985 | • ABC Kiwi silk covered 10C nitrate. K&B .29. F:Supersonic 100. Pl.K&B, Ba:Burgess, Pr. Tornado 10/4. |
| Free Flight—Cl. C | J1 | Martin Wolff Downey, Calif. | 810.2 | • Lightened Sailplane W&S modified Bo. Tissue covered 5C nitrate 2C butyrate. K&B 100; Pl: K&B; Ba:Burgess #6; Pr:Y&O 10/5 |
| | J2 | Monty Pilkington Miami | 672.4 | • Fu-Bar 65. Silkspan covered. 4C nitrate, 4C Aero Gloss. Torp .32; F Nitro-X; Pl.Champion VG2; Ba:Ray-O-Vac; Pr:Tornado 10/6. |
| | J3 | David Brownlee Stone Mtn., Ga. | 609.5 | • Hogan with different fuselage. Silk covered. 5C Testors Fox .35, F original; Pl:K&B; Ba: Willard; Pr:Top Flite 11/4. |
| | S1 | Don Helfers Arlington Hts , Ill. | 1014.8 | • W.64-512 center spar sheeted l.e S:246 R.26 32 oz. Bo 41 sheet Rt-rt pattern Silk covered. 5C Testors. K&B .32; F:O&R AA; Pl:O&R. Ba:wet cell Pr.Top Flite 10/6. |
| | S2 | Eldon Runkel Livonia, Mich | 905 | • W-64-650 10% flat bottom 2 spar constant chord S 290 2 spar 8 8% flat bottom R 5%. Bo:39 sheet box .35 oz. Rt-lt pattern Skysail covered 3&4C Dallaire butyrate, K&B .35, F.blend, Pl. Champion VG3; Ba:wet cell; Pr:Power 11/6. |
| | S3 | William Schlarb South Bend, Ind | 716.6 | • W.72-720 S 50% Bo 48 box Rt-rt pattern Silkspan covered 4C Midwest. K&B .32; F:K&B 1000; Pl K&B. Ba Burgess, Pr Tornado 10/6. |
| | O1 | James Patterson Omaha | 1750.2 | • Original. Torp .35; F:K&B 1000; Pl.K&B. |
| | O2 | Emerson Elwell Erie, Pa. | 928.5 | • Sailplane with Clark Y lifting body increased W&S thickness Lt-lt pattern 66 oz. Silk covered 10C Berryloid McCoy .60; F:original; Pl Champion VG2, Ba:Burgess; Pr:Top Flite 12/5. |
| | O3 | William Hutchins Portland, Ind. | 892.2 | • W 75-852 undercamber rib & spar. S.360 flat bottom R 40. Bo 40 crutch planked 3/32" sheet. 40.5 oz. Rt-lt pattern. CG 66%. Silkspan covered. 8C Aero Gloss. K&B .35; F-K&B 1000; Pl:K&B; Ba:Eveready; Pr:Power 11/6. |

# FULL SIZE PLANS

FROM THE AIR TRAILS MODEL ANNUAL of 1955

**Group No. 55— 50¢**

**Control-Lessen Air Tractor** by Paul J. Palenek — a unique biplane flying scale control line for engines from .14 to .31. Span is 29"; overall length is 26". Faithful copy of new crop-dusting airplane.

**Staten Island Ferry** boat model by Walter A. Musciano — the most famous passenger ferry in the world. For powering by steam engine or electric motor. Perfect for radio control. Overall length is 29¼"; beam is 7½"; overall height is 8½".

**Group No. 55A— 50¢**

**"Senior Scooter"** by Carl Wheeley — outstanding .15 powered free flight that captured F.A.I. World Championships. Spans 60"; overall length 48 inches. Very easy to duplicate.

**Class C "Speed Monitor"** by Leland S. Morton, Jr. — holder of National speed record; for .60 engines. Spans 18 inches; 20 inches overall length. Plans by H. A. Thomas.

**Semi-Scale Sikorsky R-6 Helicopter** — by Roy L. Clough, Jr. Rotor diameter, 25 inches; overall fuselage length, 21 inches. Uses any engine from .035 to .049. Simple cyclic control system makes it suitable for novice 'copter modelers.

**Group No. 55B— 50¢**

**"Last of the Mooscoupes"** — by S. Calhoun Smith. Beautiful radio controlled flying scale model for .15 engines. Tricycle gear. Span is 58"; overall length is 37¼". **"Thermal Kid"** by Frank Ehling — magnificent 61½" span towline soaring glider with 47¼" fuselage. Easy construction. Plans are half-size; wing, [illegible] and rudder ribs are full size.

## Outstanding full size plans of 1954

From the pages of Air Trails Hobbies for Young Men

**Group No. 52A 50¢**

**CONSOLIDATED B-24** World War II Bomber as detailed flying scale control line model by Frank Lashek and S. Calhoun Smith. Takes 2 or 4 engines, spans 73 inches; is 42 inches in overall length. These are the full size construction drawings.

**BUFFALO SPEED BUGS** are the latest in air-prop race cars. Power plant is Half-A engine mounted on pylon at rear of realistic race car. Attach to tether and center post and you're "off to the races."

**SKIDDIN' II** is Frank Ehling's ultra-simple outboard engine model race boat for the Atwood or the Allyn power plants. Length is 21 inches, beam is 7¼ inches. Construction is purposely simple, yet finished boat is sturdy and fast.

**Group No. 125A 50¢**

**DOUGLAS C-47 (DC-3)** twin-engine transport as a fine, flying scale control line model. A masterpiece by Walter A. Musciano. Span is 47"; overall length, 31½". Takes two engines from .14 to .23. Scaled ½ inch to the ft.

**RACING RAFT** by Bill Baughman, noted model boat designer. Attractive sport-racing boat for glow plug outboard engines. Overall length is 16 inches, beam is 6 inches. Can also be operated by electric power battery operated outboard motors.

**FLY-MIL**, contest winning outdoor hand launched endurance glider by Vern Clements. Spans 15 inches, length is 18½ inches. Scale-like appearance make it the most attractive h.l. glider in the air.

(see order form for prices)

— C/L Flying scale World War [illegible] Triple Treat by Musciano: GERMAN ME 109, 24" span. BRITISH SPITFIRE, 27" span. AMERICAN P-51, 27" span

**GROUP 123** — HALF-PEP RACER, by Emmacost. ½A. C/L realistic racer 49" span. TIPPY 32M, F/F by Kochman. Endurance model. 18" span. MINOR MACH, catapult glider by Ehling, 17" span. HOUN DOG, C/L by Macy 36" span.

**GROUP 123A** — BLACK TIGER, by R. W. Elliott. C/L stunt, World War II P-40 appearance. 46 span. DEHAVILLAND CH PMUNK, by McShane. Rubber power scale, 8½" span. AMAZON "400" by Mrs. Hill. F/F 40" span.

**GROUP 263**—MARTIN B-26 World War I. M[illegible] C/L scale by Leon Shulman. 49" span.

**GROUP 123A**—LEAPA LENA, by Ehling. ½A. F/F. 28½ span. INTERNATIONAL STUNT CHAMP by L. W. Curtis. C/L stunt 25½ span. BEAUTIFUL 6ESS, by "Chuck" Wood. Biplane rubber power 18" span

**GROUP 123A**—SASSY SAUCER C/L [illegible] G. L. Harris. 28½" diameter. SWEET SIXTEENTH, F/F by Kochman. 12½" span. LIBERTY BELLE. R/C by Dick Schumacher. 42" span

**GROUP 463**—All Radio Control models. MAGIC MAID. 56" span, low wing scale-like R/C plane. SQUARE SUE. Twin float, air prop powered cabin cruiser for R/C control. R/C MOBILE TV TRUCK. Complete construction details, including power plant

**GROUP 463A** — LEOPARD MOTH, class A control line scale model for the famous Dehavilland by "Red" Kochman. THE BOSTONIAN. Ed Dobby's contest type rubber powered model. SABRE-WING. Don Broggini's remarkable PAA-Load and rise-off-water winner 58" span

**GROUP 123A**—R/C Wittman BUTTERCUP scale model by Frank Van Baron, 62" span. LA SORRA. Leo Renaud's rubber powered. 46" span. WakeRaid Model. PORSCHE SPORTS CAR, scale replica by Kochman, building instructions and cut-away views

**GROUP 123B**—BONZO C/L flying scale by "Cal" Smith, powered by .23 to .33. SWAN SONG. F/F flying boat with 58" high wing, a realistic semi-scale model Wittman BUTTER CUP. Frank Ehling's half A C/L or F/F small scale model.

**GROUP 263**—SLOW BUG 1 foot span F/F pressure Jet turbine with realistic jet plane appearance. PAST OUT half A F/F with 37" span. contest winner by H. C. Robinson. FULL SIZE AIRFOIL SECTIONS. 12 of most popular airfoils in 8 sizes from 2½ to 5 inch chord.

**GROUP 263A** — COMBO TRAINER. Stick type, 30 inch span. all balsa, rubber powered club and instructional model. DUD AIR SPOTTER ATTACK BOMBER GAME.

**GROUP 123** — WONDER-WINGS R/C biplane by "Cal" Smith. 44" span. Semi-scale. SALTY DOG CABINETTE R/C cabin cruiser by Frank Ehling. 27½ long. Features "see-saw" construction details.

**GROUP 123A** — GRUMMAN F4F 4 WILDCAT C/L by Walt Musciano. ¾" to 1' scale. DEVIL DART by Tommy Baker 18" span Dyno-Jet powered.

**GROUP 123B** — HAWKER HURRICANE C/L British flying scale by Musciano. ¾" to 1' scale. LITTLE AUGIE by Frank Ehling. John No. 150, 22" rubber-wing semi-scale fighter

**GROUP 463C** — FOCKE WULF FW 190 - German WW I C/L flying scale by Musciano. ¾" to 1' scale. A/2 VIKING NORDIC TOWLINE GLIDER by Bill Fornasca. Half size plans with full size ribs and cross sections.

**GROUP 1063** — DOUGLAS AD3 SKYRAIDER C/L by Cal Smith, 44" span. "X-PEND-ABLE" combat stunt by Satrig, 34" span.

[illegible] BUS" F/F. ½A semi-scale by Cal Smith. 30" span "SPIRIT OF ST. LOUIS" F/F or C/L scale model of Lindbergh's ship. 29" span.

**GROUP 1163** — "TAPER WING WACO" C/L scale biplane. 46" span. "ULTRA HOGAN" by Denny Davis. F/F. 60" span

**GROUP 1263** — "ROCKET RACER" C/L, guided missile appearance. 18" span. "SASKIE" by A. G. Ackerman. 26½" span. Jetex. "JERSEY LIGHTNIN" by Cal Smith. R/C Goodyear type racer. 51" span.

**GROUP 154**—TRIMMER Admiral Man, by Monet C/L twin engine. 42" span. SWAYBACK, by CPO Hennsby, USN F/F. ½A. 27½" span. DRAFTY JUNIOR, by Musciano. Stunt F/F. 36 span.

**GROUP 254** — MITSUBISHI ZERO, by Musciano. C/L scale model. 24½" span. NANCY by Carlstrom. Stunt, 27" span. HONEYBUG by Ehling. C/L stunt. 22 span. BLUEBOY by Roth. Weight lift champ. 72" span

**GROUP 254A**—COMBATTER, by Aldrich. Stunt champ, 34" span. BONNIE LASS, by Mc-Breyer. ½A team racer. 22" span

**GROUP 854** — "HIGH-Q", Jack Port's R/C plane. Spans 54": 40" fuselage. Takes .19 engine. MARTIN MERCATOR Pilot-1, multi-engine Navy C/L bomber by Frank Lashek. Two .19 engines; spans 49", fuselage 37"

**GROUP 464** — AGGRESSOR C/L fighter with "built-up" fuselage. Designed by Earl F. Witt. .19 to .35 engine. Spans 38". maneuvers 26" HAWKER TYPHOON, British C/L rocket fighter by Musciano. .23 upright or .29 inverted power plants. Spans 31" length 24". DOLPHIN, inboard cabin Gloucester lobstermen. Made from 1/16" sheet balsa. length 16"; beam 3¾", height 3½". Uses small electric motor.

**GROUP 464A** — WAG. Dr. Walter Good's R/C high-wing monoplane. Spans 8 fuselage 63". .29 engine. MARTIAN SPACESHIP, by Roy L. Clough, Jr. Length 39"; powered by Half-A; has no wings. 10" dia.

**GROUP 854** — HI-SPY by Hal Roth, F/F Half-A engine-powered. Pylon type, engine mounted in wing! Spans 48"; overall length 32". WHAT-IZZIT by Frank Ehling. R/C amphibian military truck and boat. Driven by air prop. can be run on land or in water. 6.5 beam 23" length 15.5" high. .074 diesel engine or equivalent FOKKER TRIPLANE by Fred Feechanek. C/L scale World War II German fighter. 60 engine. Spans 25" 28" overall.

**GROUP 854A** — WALT GOOD'S Neo-Selective 3-tube 27 mc. radio receiver for R/C. Full size patterns and helpful photos, plus circuits. MAC IL Hi-Power 5-Watt Transmitter by Howard McEntee. Full size chassis drawings and all data. M.NI.MAC Hard Tuber by Howard McEntee. Simplest thing in midget type receivers. UNITUNE sub-miniature CK522AX tube.

**GROUP 654** — BELL P-39 AIRACOBRA, scale C/L fighter plane by Musciano. For 14 to .15 spans 28". length 26". McGOVERN'S MONSTER by Dan McGovern. Giant-size ROG-ROW amphibian F/F for R/C work. Spans 144"; length 92". .36 to 1.25 power plants.

**GROUP 654A** — SALT LAKE CITY SADIE, F/F by Barney Taft. .15 to .21 engines. Spans 64" length 41. OBEE sea sled-type cabin cruiser. Outboard or inboard power plant. Good for R/C. Length 18½"; beam 7". height 6½". GOOD'S XTAL. XMTR. in 27.255 tone transmitter by Dr. Walter A. Good for use with his non-selective audio receiver. Full size chassis pattern, etc.

**GROUP 754** — "KILLER" COMBAT KITES, semi-scale MIG-19 and F 00, for rubber towline endurance or string-toured fighting. MIG spans 30" fuselage 25". F-100 spans 28" 36" long. ED-MAID racing hydroplane inboard engine powered water speedster. Uses .049 down to .02. Length 11"; height 3¾" width 8". STA-PUT PUTT-PUTT, "tethered" F/F endurance model. Takes .049 to .098. Spans 56"; length 39".

**GROUP 754A** — OVER AND UNDER Harold deBolt's stunt R/C plane for .19 to .23 engines. Spans 65½"; 45 fuselage CHANNEL WINGER, Roy Clough's semi-scale C/L of Custer's Channel Winger. .049 Thermal Hopper spans 19"; length 25½" DE HAVILLAND MOTH, C/L flying scale biplane. Spans 20"; 16" fuselage. Small Cub engines.

**GROUP 954** — JAUNTY AUQUETTE, semi-scale C/L by-pass turbine jet power fighter-type by Roy L. Clough, Jr. Powered by Space Bug Jr. engine. Spans 30"; length 22". MACCHI C-200 and C-202, scale model C/L Italian fighter by Musciano. .14 to .35; spans 28½", length 21½".

**GROUP 954A**—TOP KICKER and BOTTOM ROCKER racing speedboats, for .049 to .09. Top Kicker inboard installation. Latter has 5" beam, 1" long. Top Kicker is 11½" long, 5" beam. Designed by Eschenburg and Witt.

**GROUP 1054** — FLETCHER FL-23 scale Half-A by Abramark. For .049; spans 28½"; length 24½" ECONOMO ELECTRIC RUNABOUT; electric powered. Length 13½"; beam 3½. MAC-MECH PULSER by Howard McEntee. Actual size drawings to build this new mechanical pulsing box.

**GROUP 1154** — NEPTUNE by S/Sgt St. Clair F/F. spans 50" length 17½". SAMBA SLED by Baughman. Air-prop powered twin float boat. Length 10½" width 7" SQUEAKER C/L speed model by Baker Class A; spans 13½"; length 13½" PEGASO. world's most fabulous auto. Length 8½" width 3½"; height 2½"

**GROUP 155** — PIPER CUB J-3, R/C flying scale model by Hollinger. Spans 30" length 44" LITTLE ARKY scale-type Arkansas house boat. Length 13½" beam 4½". height 4½" JAMBOREE stunt model by Maj. Bourgeois. Engines from .19 to .23 spans 3' length 27½"



## ORDER FORM

[Check Selection]

| | |
|---|---|
| #123 | ☐ .50 |
| #163 | ☐ .50 |
| #263A | ☐ .50 |
| #353 | ☐ .50 |
| #363A | ☐ .50 |
| #563A | ☐ .50 |
| #653 | ☐ .50 |
| #653A | ☐ .50 |
| #753A | ☐ .50 |
| #753B | ☐ .50 |
| #863 | ☐ .35 |
| #[illegible] | ☐ .35 |
| #[illegible] | ☐ .50 |
| #953A | ☐ .35 |
| #[illegible] | ☐ .35 |
| #[illegible] | ☐ .35 |
| #[illegible] | ☐ .50 |
| #1053A | ☐ .35 |
| #1153 | ☐ .50 |
| #[illegible] | ☐ .50 |
| #154 | ☐ .50 |
| #254 | ☐ .50 |
| #254A | ☐ .50 |
| #354 | ☐ .50 |
| #454 | ☐ .50 |
| #464A | ☐ .50 |
| #854 | ☐ .50 |
| #854A | ☐ .35 |
| #654 | ☐ .50 |
| #664A | ☐ .50 |
| #754 | ☐ .50 |
| #754A | ☐ .50 |
| #854 | ☐ .50 |
| #954 | ☐ .35 |
| #954A | ☐ .35 |
| #1054 | ☐ .50 |
| #1154 | ☐ .50 |
| #1254 | ☐ .50 |
| #155 | ☐ .50 |
| #55 | ☐ .50 |
| #55A | ☐ .50 |
| #558 | ☐ .50 |

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## Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Free Flight ROW | J1 | Dave Yust | 564.5 | |
| | J2 | Paul Paine Windsor, Ont. | 419.4 | • Same as J2 C1. A free flight with Mahieu floats. |
| | J3 | Jim Martin Hamburg, N Y. | 295 4 | • Zeek with ½" added tip dihedral. Double Silkspan covered. 5C Aero Gloss. K&B .19, F:K&B 1000, Pl.K&B, Ba:Olin; Pr:Top Flite 9/6. |
| | S1 | R. Cherny | 813 | |
| | S2 | Don Helfers Arlington Hts., Ill. | 798.5 | • W 52-338 center spar sheeted l e. S.115. R 17, 18 oz. Bo 33 built up sheet Rt-rt pattern CG 90% Silkspan covered 5C Testors K&B .15; F:O&R AA, Pl:O&R; Ba:wet cell; Pr Tornado 8/6. |
| | S3 | Carl Curtis San Mateo, Cal. | 766.4 | • 33.75-195 5 MVA 301 S 79 Clark Y. R:twin 17. 6 oz. Bo 28 sq. with 4" built up pylon CG 95% Tissue covered. 3C Testors 2C Aero Gloss Torp .049 with Space Bug head, F Ohlsson Gold Seal 2000; Pl:Space Bug; Ba:Burgess; Pr:Tornado 6/3. |
| | O1 | S. S. Hachenberg El Paso | 1010 | • W.48-336 H4010 semi-geodic S 126 H3507 semi-geodic 15.2 oz. Bo 34 1/16" sheet sq. with pylon R:7%. CG 90%. Tissue covered. 3C Glidden 1C Tuff. Torp .15; F Supersonic 1000; Pl:Torp; Ba:Burgess; Pr Top Flite 8/3.5. |
| | O2 | Robert Rother Rock Hill, Mo. | 994.4 | • W:38-250 S 40% Clark Y R 7.5 5 oz Bo 22 crutch const Lt-rt pattern CG 60%. Silkspan covered. 3C Cooks butyrate. Atwood .049; F:Hellz Fyre; Pl:Wasp; Ba Burgess, Pr.Kaysun 5.5/4. |
| | O3 | F. L. Swaney Long Beach, Cal. | 951 | • Spacer (same model holds national record in C). A 35;29.6). Tissue covered. 5C India butyrate. K&B .23; F:Thimble Drome racing; Pl.Champion; Ba:General #6; Pr:Y&O 9/5. |
| Half-A Scale Free Flight | J1 | Jim Watson Ft Des Moines, Iowa | 143.6 | • Focke Wulf Stoesser. Skysail covered. 3C Aero Gloss. Wasp .049, F:Thimble Drome, Ba:Eveready; Pr.Top Flite 6/4. |
| | J2 | Patrick Heodley Bloomington, Ind. | 18.6 | • Berkeley Cessna L-19A Bird Dog with 1/32" sheet on Silkspan covered. 5C Testors sealer & Aero Gloss. Cox .049; F:Thimble Drome; Pl:Thimble Drome; Pr:Tornado 6/3. |
| | S1 | Paul Crowley Detroit | 354.2 | • Berkeley Aeronca Sedan. 15C Testors & Berryloid. Wasp .049 cleaned up; F.Cheminol AA, Pl:Quik Start; Pr:Top Flite 6/3. |
| | S2 | Bob Sutton Topeka | 72 | • Piper Skycycle Comet-Wylam combo plans. Double tissue covered. 10C Aero Gloss. K&B .049. F:K&B 1000; Pl:K&B; Pr.TopFlite 6/3. |
| | S3 | Don Alberts Albuquerque | 70 | • Tissue covered 5C nitrate. Allbon diesel .033. F:McCoy; Pr K&B 6/3. |
| | O1 | Edward Stoll Detroit | 344.5 | • Modified Berkeley Fairchild "24" structure redesigned. Tissue covered 10C Testors. Wasp .049, F:Cheminol AA, Ba:Burgess, Pr Top Flite 6/3 |
| | O2 | John Zimmerman San Francisco | 200.6 | • Berkeley L-19 Bird Dog. Silk covered. 10C Aero Gloss. Wasp .049; F.Supersonic 1000; Pl:K&B; Pr:Tornado 6/3. |
| | O3 | Bruno Markiewicz Detroit | 191.4 | • Berkeley's Piper Super Cruiser. Tissue covered. 5C Berryloid. K&B .035; F:O&R AA; Pl:K&B; Ba:Burgess; Pr.6/3. |
| Cargo Clipper | 1 | Herb Kothe Arlington, Tex. | 25.5 oz. | • W:66-624 NACA 4612 single full depth beam with false ribs S.211 8% Clark Y. R 40; 7 oz Bo:43 box CG 40% Lt-lt pattern Tissue covered. 3-4C Nitrate Atwood Signature .049; F.O&R AA; Pl:Atwood; Ba Ray-O-Vac; Pr Tornado 6/3. |
| | 2 | Alfred St. Clair Williams AFB, Ariz. | 21.5 oz. | • W.50-350 4612 with flat bottom D-tube l.e V-t.e S·150 Clark Y 6% 6 1/8 oz Bo:32 sheet sides bulkheads trike l.g. Straight-rt pattern. CG 50%. Tissue covered. 3C nitrate McCoy diesel 049; F:McCoy; Pr:Hy Thrust 7/3. |
| | 3 | W Blanchard, Jr. Hampton, Va. | 21.25 oz. | • W.66-380 semi-geodetic sliced ribs. S·96 semi geodetic 6.9 oz. Bo:30 sheet balsa over longerons. Lt-lt pattern CG 65% Tissue covered 3C Glidair nitrate 1C Randolph butyrate. Thermal Hopper .049; F:Thimble Drome racing; Pl:Thimble Drome; Ba:Eveready; Pr:Tornado 6/3. |

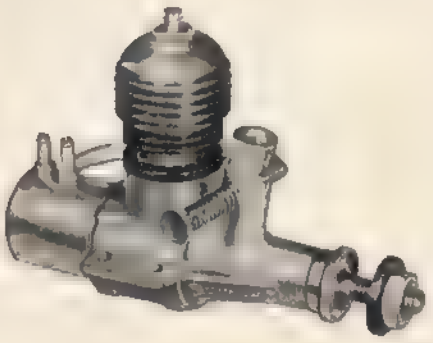
**McCOY IS FIRST AGAIN WITH . . .**

# Really BIG news for '55

*Introducing 2 great new* **"GUARANTEED* SUPERIOR"** *.049's*

**.049**

**Baby "MAC"**



**$4.95**

*Complete with fuel tank*

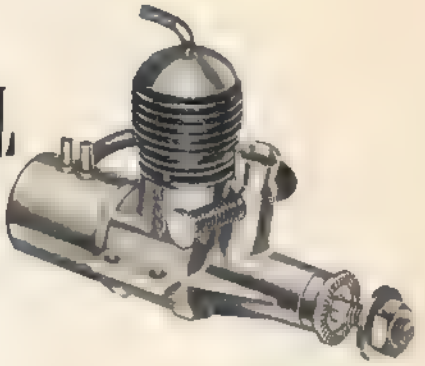
**AT LAST**... the FIRST truly all-around ½A glo engine. For YOU—whether beginner or expert. All sport and contest flyers will marvel at its consistently easy starting and over-all superior performance. No more "bugs," no more problems – just sheer modeling pleasure.

It's another McCoy FIRST in design engineering progress. The BIG new exclusive feature combines a rotary and poppet valve induction system that assures *Balanced Fuel Flow* at *all times*, regardless of RPM. That's why it's the easiest starting and best operating engine for *you*.

The great NEW McCoy .049 "Baby Mac" has the power and versatility you need for *all* sport and contest free-flight, control line, and radio control flying events. Rugged... ideal for boats, race cars and other model uses.

**.049**

**DIESEL**



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**BY POPULAR DEMAND**... McCoy, the pioneer of modern Diesel design, offers this new, all-improved beam mount ½A Diesel engine. For you who want the rugged power output of a Diesel and proven top performance, the NEW McCOY is *it*.

Incorporating all the exclusive design features of the "glo" engine, the McCoy Diesel also has *Balanced Fuel Flow* induction for quick positive starting and high power RPM. There's real operating pleasure with this engine.

Just as before, this great NEW .049 Diesel has the power and versatility for all your modeling needs. Unsurpassed for SPORT and CONTEST flying, it has distinctive features guaranteeing better performance than any other Diesel of foreign or domestic design.

## WHY McCOY—GLO OR DIESEL—IS YOUR BEST BUY

- Low initial cost—only $4.95
- Low upkeep—GUARANTEED highest quality materials and workmanship.
- Guaranteed easiest starting Glo Engine. The *Balanced Fuel Flow* system gives one or two flip starts. NEVER runs backwards.
- Guaranteed best all-around performing glo engine. Most consistent running and highest power. Tops for two-speed operation.
- Longest fuel draw-in ½A GLO. Ideal for sport, stunt and R-C flying.
- Vibration free engine. Counter-balanced crankshaft gives velvet-smooth power.

- Low initial cost—only $5.95.
- Low upkeep—Guaranteed highest quality workmanship and materials throughout.
- Guaranteed easiest starting Diesel. A NEW operating method gives quick starts. NEVER runs backwards.
- Guaranteed best all-around Diesel performance. Consistently high power and excellent two-speed operation for all model events.
- Longest fuel draw. Best when actually flying.
- Vibration free engine. Smooth RPM in all stunts. New improved dynamically balanced crankshaft.
- No hot-fuel proofing with Diesels. McCoy fuel is guaranteed harmless to regular dope finishes.

**McCOY ½A GLO FUEL**—*guaranteed superior performance in McCoy and all other small glo engines.*

**McCOY DIESEL FUEL**—*Guaranteed easiest starting and best performing in all Diesel engines.*

*McCoy famous checkered flag line . . .*

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**PRODUCTS COMPANY**

8509 Higuera Street • Culver City, California

# Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| PAA Load—Cl. A-B | JS1 | Robert Patchin Hawthorne, Cal. | 543.2 | • Ellison's Paddy Wagon. W 66-608 2-spar sheet l.e. S:225 1-spar cap strips. R:42. Bo:45 built-up crutch silk covered. CG 70%. Rt-lt pattern. 22 oz. Tissue covered. 8C Aero Gloss. Fox .19; F:K&B 1000; Pl:Cheminiol; Ba:Burgess #6; Pr:Tornado 9/4. |
| | JS2 | Francis Ahearn Lincoln Park, Mich. | 501.6 | • W 64-512 40 7. Clark Y stab. Bo:38 sheet CG 75%. Rt-lt pattern. Tissue covered. 5C nitrate butyrate Torpedo .19 new piston & cylinder wall; F:Thimble Drome, Pl:Champion, Ba:Eveready; Pr:Top Flite 9/4 |
| | JS3 | Bill Schlarb South Bend, Ind. | 437 | • W:60-540. S 50%. Bo.36 box .32 oz. Rt-lt pattern. CG t.e. of wing. Silkspan covered. 4C Midwest. K&B .19; F:K&B 1000; Pl:K&B; Ba:Burgess; Pr:Tornado 9/4 |
| | O1 | Bruno Markiewicz Detroit | 828.4 | • W:64-640. S 40% flat. Bo.51 sheet R 9% Rt-rt pattern. 24 oz. Tissue covered. 5C Berry Bros. K&B .19. F:Nitro-X; Pl:K&B Ba Burgess, Pr:Top Flite 9/4. |
| | O2 | Joseph Foster San Jose, Cal. | 764 | • W 54-475 Goldberg multi spar S 200 9% Clark Y Bo:39 sheet box. Rt-rt. 35 oz. CG 60% Silkspan covered K&B .19 squared intake port, F.K&B 1000; Pl K&B; Pr.Top Flite 9/4. |
| | O3 | Jack Oxley Long Beach, Cal. | 650.8 | • W 72-820 Goldberg multispar, S:246 flat section R 24.75. Bo:39.5 built up. 26 oz. CG 75%. Tissue covered. 5C Testors & Aero Gloss. Torp .19; F:Thimble Drome; Pl:Champion; Ba:Eveready; Pr:Y&O 9/5. |
| PAA Load—A/2 | JS1 | J. Ziomek Allen Park, Mich. | 805 | • W.38-228 Goldberg S 79 Clark Y. Bo:32 R:17 Rt-lt pattern. 8 oz. CG 70%. Tissue covered. 3C nitrate. Space Bug .049; F:Thimble Drome; Pl:Thimble Drome, Ba Burgess, Pr Tornado 6/3. |
| | JS2 | Dave Oberheim Pittsburgh | 635 4 | • W:42-252 Westinghouse airfoil planked. S:70 multi spar. R:10. Bo 27 sheet const 6 oz. Rt-lt pattern CG 80% Tissue covered 4C 50% nitrate 1C Aero Gloss. Cox .049, F:Thimble Drome; Pl Thimble Drome; Ba:Burgess #6; Pr:Kaysun 6/3. |
| | JS3 | Kenny Kaelon Rosemead, Cal. | 470.3 | • W 36-180 12% Clark Y 2-bottom spars sheet l.e. S:90 7% Clark Y 2 bottom spars sheet l.e. R:4. Bo:28 square sheet box 6 5 oz. Rt-lt pattern CG 20% Tissue covered. 10C filler 4C Aero Gloss. Atwood .049, F:K&B 1000; Pl:Ohlsson; Ba:Burgess; Pr: Top Flite 8/4. |
| | O1 | Joe Ziomek Allen Park, Mich. | 895.2 | • W:44-308 Clark Y. S 105 Clark Y. R:15. Bo 26.5 6.5 oz. Rt-lt pattern CG 70%. Tissue covered 2C nitrate Space Bug .049, F Thimble Drome, Pl Thimble Drome; Ba:Burgess; Pr:Tornado 6/3. |
| | O2 | Merl Shammo Clinton, Ohio | 715.8 | • Liftmaster fuselage; PAA Master wing and tail. Tissue covered, 3C Testors. McCoy .049 diesel; F:"OK" Cub diesel, Pr:Tornado 7/3. |
| | O3 | Jim Kohls Detroit | 606.2 | • W:38-250 Goldberg square tip multispar S:100 9% Clark Y. Bo:24 sheet cabin R:12. Rt-lt pattern. CG 60%. 6.5 oz Tissue covered 5C Murphie's, 1C Tuff. Cox .049; F:Thimble Drome; Pl:Thimble Drome; Ba:Bright Star #2; Pr:Tornado 6/3. |
| Limited Rubber | J1 | Jack Koontz Massillon, Ohio | 553.1 | • Gollywock rudder tiplates enlarged. Tissue covered. 3C nitrate. Pr:14/28. 6 loops ¼ 24" T-56. 800 turns. |
| | J2 | T. McPhedran Windsor, Ont. | 436 | • Gollywock. Tissue covered. 4C Berryloid. Tester 15" prop. 8 loops ¼ 22" T-56. 500 turns. |
| | J3 | Joe White Sacramento | 434.4 | • W:36-146 multi spar. S:54 Clark Y multi-spar. R:22. 5.25 oz. CG 95%. Rt-rt pattern. Tissue covered 3C nitrate Pr.18/18. 6 loops ¼ 39" T-56 1000 winds. |
| | S1 | Donald Kintzele West Allis, Wisc. | 573.8 | • W.33-142 RAF 32-Eiffel 400 single spar. S:57.5 thinned Clark Y R:15%. 5.1 oz. CG at t.e. Bo:29 ⅛ longerons 1/16 x ⅛ cross. Rt-lt pattern. Tissue covered. 3C Midwest. Pr:14 X-block. 12 loops ¼ flat 27" Pirelli. 600 turns. |
| | S2 | Don Crow Worthington, O. | 549.1 | • "AT" Bostonian slightly smaller. Tissue covered. 4-5C acetate. 26 loops 3/16 30" T-56. 600 turns. |
| | S3 | Hermann Andresen Chicago | 477.9 | • W.36-140 sliced rib. S:56. Bo:42 truss 5 oz. Rt-rt pattern. CG 100% Tissue covered. 3C Berryloid. Pr 20/20. 6 loops ¼ 60" T-56. 1400 turns. |
| | O1 | Edward Krause Milwaukee | 745.5 | • W 36-160 Eiffel 400 RAF bottom single spar. S:50 9% Clark Y. Bo:34 box. 5 oz. Rt-rt pattern. CG 60%. R:24. Tissue covered. 4C nitrate. 16 loops 3/16 33" Pirelli. 650 turns. Pr 17/17. |
| | O2 | Tony Becker, Jr. Philadelphia | 713.4 | •W.38-150 NACA 6409 multi spar. S:50 Clark Y single spar. R:17 Bo:42 1/16" sheet. Rt-rt pattern. 5 oz CG 1" behind t.e Tissue covered. 4C Testors. 10 loops ¼ 32" Pirelli. 900 turns. Pr:18/22. |
| | O3 | C. A. Schuchmann Belleville, Ill. | 681.3 | • Gollywock Warren truss fuselage nose ribs reinforced stab with extra spars and ribs. Lt-rt pattern. Bo:silk. WSR:tissue. 3-4C nitrate. 12 loops ¼ 27" T-56. 785 turns. Pr:12/24. |

# NEWS F-L-A-S-H-E-S

## direct from the 1954 NATIONALS . . .

# MORE NATIONALS CHAMPS WON with TOP FLITES and POWER PROPS THAN THE 4 OTHER MAKES COMBINED!

## HERE'S WHAT THE CHAMPS USED TO WIN!

Here's a real flyer—BOB CHERNY of Sacramento won 2 BIG FIRSTS. Above, Bob shows his Cl. B Senior winning WHOZIT, powered by a K & B 23 . . . time 16:36.8 . . . fuel, Ohlsson Gold Seal ½A. PROP . . . 9-4 TOP FLITE! See his other 1st below.

Young ROD PHARIS really showed 'em a beauty with his original JUPITER. Bagging 346.5 pts. in Junior Stunt, he fueled his Fox 35 with Power Mist and swung a 10-5 TOP FLITE PROP. Detroit and TOP FLITE are mighty proud of Rod.

Happily winning the helicopter event for the 2nd straight year is "PAR" SCHOENKY of Kirkwood, Missouri. Cheminol AA was the bang-water for his Atwood .049 and O. K.-14 engines . . . and he really got nifty lifts with his 6-3 and 9-4 TOP FLITE PROPS. That's Carl Goldberg of TOP FLITE on the left.

Detroit comes thru again with ED STOLL, who repeated his 1953 win in Cl. ½A Scale Open. This year, Ed amassed 344.5 pts. with his beautiful flying Fairchild. His engine was a Wasp . . . fuel, Cheminol AA . . . PROP, 6-3 TOP FLITE.

## SPECIAL FLASH!

**International FAI Gas Winner and World Champion User Top Flite Prop!**

Note by Ed—EARL A. WHEELEY of Westingten, D. C., in the world's most grueling gas model competition, held on Long Island, July, 1954. Carl beat the best from many nations with his Senator, smashing home with 844 sec. Engine, Torp 13.

Fuel, K & B 1000. PROP—and we're really proud of this one—an 8-3½ TOP FLITE!

In 1952, ALEX SCHNEIDER of San Francisco won Radio Control with his 5-Channel Rockwood Set and original Piper Cub. This year Alex dominated the field again with 183 pts. Engine, Spitfire 40. Fuel, gas and oil. PROP, 14-6 TOP FLITE.

**FREE FLIGHT GAS**

**Cl. ½A Junior**
Darryl Katz
Detroit, Mich.
Time 13:14
Engine Atwood .049
**PROP 6-3 POWER PROP**
Fuel Thimble Drome Racing
Plane Fuber 36

**Cl. ½A Open**
Gabriel Martinez
New Orleans, La.
Time 17:43.3
Engine Atwood .049
**PROP 5¼-4 POWER PROP**
Fuel O & R #2
Plane Modified Kiwi

**Cl. ½A Scale Junior**
Jim Watson
Fort Des Moines, Iowa
Engine Wasp
**PROP 6-3 TOP FLITE**
Fuel Thimble Drome
Plane P. W. Stesser

**Cl. ½A Scale Senior**
Paul Crowley
Detroit, Michigan
354 pts.
Engine Wasp
**PROP 6-3 TOP FLITE**
Fuel O & R AA
Plane Aeronca

**Cl. A Senior**
Robert Galvin
Topeka, Kansas
Engine K & B Torp 19
**PROP 10-3-½ TOP FLITE**
Fuel K & B 1000
Plane Spacer

**Cl. B Junior**
David Brownlee
Stone Mountain, Ga.
Time 10:31
Engine K & B 23
**PROP 9-4 TOP FLITE**
Fuel Home Brew
Plane Spacer

**Cl. B Open**
Earl Anderson
South Bend, Ind.
Time 17:52.2
Engine O & R 23
**PROP 9-6 TOP FLITE**
Fuel Nitro-X
Plane Gaffy 1

**Cl. C Senior**
Don Helfers
Arlington Heights, Ill.
Time 16:54
Engine Torp 32
**PROP 10-6 TOP FLITE**
Fuel O & R AA

**Rew Senior**
Robert Cherny
Sacramento, Calif.
Time 13:33
Engine K & B 15
**PROP 8-6 TOP FLITE**
Fuel Ohlsson Gold Seal ½A
Plane Lancer

**Rew Open**
Sherman Heckenberg
El Paso, Texas
Time 16:50
Engine K & B 15
**PROP 8-3-½ TOP FLITE**
Fuel K & B 1000
Plane Original—My Sin

**CONTROL LINE**

**Stunt Open**
Don Still
Beaumont, Texas
349.8 pts.
Engine Fox 29
**PROP 9-6 TOP FLITE**
Fuel O & R Hellzfyre
Plane Stuka

**Combat Junior**
Bill Trevisan
Detroit, Michigan
348 pts.
Engine Fox 35
**PROP 10-6 POWER PROP**
Fuel Power Mist
Plane Original

**Combat Open**
Frank Adams
New Albany, Ind.
Engine K & B 35
**PROP 10-6 POWER PROP**
Fuel K & B 1000

**Flying Scale Junior**
Jose Pinero
Hato Rey, Puerto Rico
183 pts.
Engine Cameron 19
**PROP 8-6 POWER PROP**
Fuel K & B 1000
Plane Cessna Bird Dog

**Flying Scale Senior**
J. McCroskey
Iredell, Texas
311 pts.
Engine K & B 32
**PROP 9-6 TOP FLITE**
Fuel Power Mist
Plane F-51

**Flying Scale Open**
Robert Youmans
West Haven, Conn.
329 pts.
Engine Two K & B 29's
**PROP 9-6 POWER PROP**
Fuel Hellzfyre
Plane P2V2 Neptune

**Speed Class ½A Junior**
Martin Maciag, Jr.
Matawan, N. J.
Time 72.43 MPH
Engine Thermal Hopper
**PROP 6-½-7 POWER PROP**
Fuel Hellzfyre

**U. S. Navy Carrier Senior**
Dave Bomizi
Rocky River, Ohio
417 pts.
Engine Fox 35
**PROP 9-7 TOP FLITE**
Fuel Cheminol XL-2
Plane Grumman AF2-S Guardian

**PAA LOAD**

**Cl. ½A Jr.-Sr.**
Joe E. Ziomek
Allen Park, Mich.
Time 13:25
Engine Space Bug
**PROP 6-3 TOP FLITE**
Fuel Nitro-X
Plane Original

**Cl. ½A Open**
Joseph Ziomek
Allen Park, Mich.
Time 14:55.2
Engine Space Bug
**PROP 6-3 TOP FLITE**
Fuel Nitro-X
Plane Original

**Cl. AB Open**
Bruno Markiewicz
Detroit, Mich.
Time 13 58.4
Engine Torp 19
**PROP 9-4 TOP FLITE**
Fuel Nitro-X

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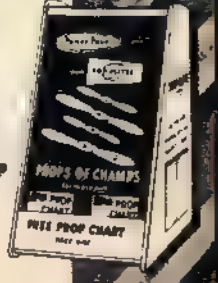


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**TOP FLITE MODELS, INC.,**
2637 S. Wabash Avenue, Chicago 16, Illinois

## Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Wakefield | J1 | Joseph White Sacramento | 652.6 | • W 44.5-209 multi spar. S·80 Clark Y multi spar. R:24. 8.5 oz. Bo·47 Warren truss. Rt-lt pattern. CG 102% Tissue covered. 4C nitrate 10 loops ¼ 31" T-56 800 turns Pr 23/23 |
| | J2 | James Mueller Chicago | 511.4 | • W:51-240 split ribbed. S:60. Bo:51. 8.5 oz. CG 100%. Tissue covered. 4C Midwest. 8 loops ¼ 36" T-56. 750 turns. Pr:23/12 |
| | J3 | P. Hartman | 85 | |
| | S1 | Jim Bowers Cleveland | 823.4 | • W:44-215 6409 multi spar. S:67 Clark Y. Bo:37 Warren truss. 8.4 oz. R:20. Rt-lt pattern. CG 85%. Tissue covered. 4C Aero Gloss. 6 loops ¼ 37" Dunlop. Pr·19 5/23. 750 turns |
| | S2 | Tom McNerney, Jr. Kansas City, Mo. | 683 | • W:44-220 thin undercambered 2-spar planked l.e. S·72 flat 2-spar planked l.e. Bo:52. 8.2 oz. Rt-rt pattern CG 60% R 20 Tissue covered. 4C nitrate 6 loops ¼ 40" black Dunlop Pr:20/20. |
| | S3 | Bill Schlarb South Bend, Ind. | 624 | • Lidgard design. Bo:36 box. CG 66%. Rt-lt pattern. Silkspan covered. 2C Midwest. 16 loops 32" T-56. 900 turns |
| | O1 | Bob Bienenstein Detroit | 896.2 | • W:114 area multi spar with sheet l.e. S:80 Clark Y. Bo.45 Warren truss. R·19. 8.4 oz. Rt-lt pattern. CG 80% Tissue covered 3C Berry Bros. 14 loops ¼ 32" Pirelli Pr.21/24. 640 turns. |
| | O2 | Cesor Altamirano | 856 6 | |
| | O3 | George Jensen Cleveland | 845.8 | • W·46.5-220, modified 6409 multi spar. S 74 Clark Y. R:28. Bo:46 Warren truss. 8.25 oz. Rt-rt pattern. Tissue covered. 5C nitrate. Pr:19/26. 18 loops ¼ 33.5" T-56. |
| PAA Load—Rubber | 1 | W Blanchard, Jr. Hampton, Va. | 296.3 | • W 33.5-145 sliced rib central spars. S 50 Bo:32 sheet balsa monocoque .5 oz R·14. Rt-rt pattern. CG 90%. Tissue covered. 3C Glidair nitrate. Pr.9.87/22 5 loops ¼ 28" Pirelli. 800 turns. |
| | 2 | Richard Sladek San Diego | 206.3 | • W:31.5-145 single spar. S 50. R:20. Bo 31 Warren truss .5 oz CG 50% Lt-lt pattern. Tissue covered. 4C nitrate. Pr:10/24. 8 loops ¼ 30" Pirelli. 600 turns. |
| | 3 | Joseph Kubina | 194.4 | |
| Outdoor H/L Glider | J1 | Bob Wanenmacher Cleveland | 309.8 | • W 16-55. S:17 R·1. Wt .47 oz. Bo:20 basswood. 3C talc & dope. Rt-lt pattern. |
| | J2 | Dave Yust Wichita | 283.5 | • W:18-45.5 ¼" quarter grained light balsa. S:1/32" quarter grained light balsa. Bo:basswood. 1 oz. Rt-lt pattern. 1C Testor sealer. |
| | J3 | Arthur Slater Brooklyn | 153.4 | • W:16-45 balsa. S:13.5 balsa. R:2. CG 60%. Wt. .7 oz. Rt-lt pattern 3C Testors sealer |
| | S1 | Bernard Boehm South Bend, Ind. | 239 | • W:16. S:12. Bo:16.5. R:1.25. Rt-lt pattern. |
| | S2 | Donald Kintzele W. Allis, Wisc. | 253.2 | • W:16-60 light quarter grained sheet balsa. S:21%. Bo·17 hardwood. R·3%. Wt .9 oz. CG 50% Rt-lt pattern. 1C dope 1C sealer. |
| | S3 | Francis Roxas Chicago | 224 | • W:16-64 balsa S:35% Clark Y thinned. R·20%. Wt .9 oz. Bo:20 hard 3/16" balsa Rt-lt pattern. CG 50%. 2C Midwest. |
| | O1 | Lawrence Conover Oxford, Iowa | 589 | • W:18-57. S.14. Bo.16. CG 50%. 3C Testors. 1.2 oz. |
| | O2 | A/1c Chas. Rushing Chicago | 413.2 | • W:20-68 thin Clark Y ⅛" sheet S 16 flat bottom 1/16" sheet. R:2 75. CG 50%. Bo:20 mahogany. Wt. 9 oz W3C-SR2C-Bo4C nitrate. Rt-lt pattern |
| | O3 | James Lang Swisher, Iowa | 358 | • W·20.5-70 undercamber. S:18.5 symm. R:4.5. 1.57 oz. CG 65%. Lt glide. 2C nitrate. |

# Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Towline Glider Limited | J1 | John Watson Ft DesMoines, Ia. | 730.7 | • W:39-256.5 Eiffel 400 monospar. S 80 Clark Y. R:20. Bo 36 triangular shape sheet. 10.85 oz. CG 95% Skysail covered. 5C nitrate. 328' line |
| | J2 | Albert Lynch, Jr. Chicago | 475.2 | • W:52,276 channel l.e. & t.e. box spar split ribs. S:74. R:3.5%. 10 oz. Bo:37 built up sheet. Glides lt. Silkspan covered. 5C Berryloid 300' line. |
| | J3 | Joseph White Sacramento | 411.8 | • W-50-250 multi spar. S-100. R:17. Bo.36,¼" sheet. CG 75%. 10 oz. Silkspan covered. 4C butyrate. 300' line Cross over tow to lt, glide lt. |
| | S1 | Gareth Lucier Windsor, Ont. | 353.1 | • W:55-275 NACA 4612 built up sheeted l.e. S:72 9% Clark Y. R:15% Bo:sheet balsa box. CG 60%. 10 oz. Tissue covered 3C Berryloid. 328' line. |
| | S2 | H. Andressen Chicago | 254 | • W:51-275 MVA 301 sheet l.e. & t.e. S:72 turbulator ahead of l.e. Bo:36 sheet box. 10 oz. Rt glide. CG 50%. R 14. Silkspan on wing bottom other tissue. 12C rubbed Berryloid. 328' line. |
| | S3 | Bob Surrency Memphis | 210 | • Thermic 50. Silk covered. 17C nitrate. 300' line. |
| | O1 | Louis Kretovics, Jr. Lorain, Ohio | 641.2 | • W:48-288. S.60. R:9. Bo:33.25 sheet covered. 10.5 oz. CG 62.5% Rt circle. Silkspan covered. 8C Aero Gloss. 300' line. |
| | O2 | W. Blanchard, Jr. Hampton, Va. | 578 | • W:52-260 sparless. S:85. R:14. Bo.38 balsa pod 3/8" birch dowel tail boom. 10.5 oz. CG 100%. Lt glide Tissue covered. 4C Glidair nitrate. 200' line. |
| | O3 | Al Geltz Landisville, Pa.. | 487.7 | • W-52-280 Clark Y. S:70 Clark Y. R:two each 12. 11 oz. Bo:26 box. Rt glide. CG 60%. Silkspan covered. 4C Testors. 328' line. |
| Nordic Glider | J1 | P. Hartmann | 554.5 | |
| | J2 | J. Rivera-Pineiro Hato Rey, P. R. | 511.5 | • Jasco kit. Silkspan covered. 4C nitrate. 150' line. |
| | J2 | Patrick Hoadley Bloomington, Ind. | 397.4 | • W:65-425 6409 2 spar. S:100 geodetic. Bo:48 box. CG 66%. Rt circle. 17 oz. Silkspan on wing light tissue on stab. 5C Testors & Aero Gloss. 164' line. |
| | S1 | Paul Crowley Detroit | 600.2 | • W:65-427 NACA 6412 sheet l e. wide t.e. S:99 Clark Y 6%. R:28.7. Bo:55 Warren truss. 14.75 oz. CG 75%. Tissue covered. 5C lacquer. 164' line. |
| | S2 | Dave Cartwright Minneapolis | 560.3 | • Mark Jones design. W:71-426 NACA 6409 sheet l.e. S:80 Clark Y. R:24. Bo:37 box auto rudder inside. 15.2 oz. Silkspan covered. 4C Speed-O-Lac. 164' line. |
| | S3 | R. Andressen | 557.1 | |
| | O1 | James Patterson | 816.1 | |
| | O2 | George Howard Glasgow,Scotland | 749.9 | • Seraph II. Modelspan covered. 3CW-2C—6CBo nitrate. 100' line. |
| | O3 | Ernesto Colombo | 691.6 | |
| Hiller Helicopter | 1 | Parnell Schoenky Kirkwood, Mo. | 130.66 | • Used 2 models. "XH-5" 36" rotor dia. Sikorsky-type fuselage. "JH-3" Jetex 2 Scorpions 75" rotor dia. Hiller Hornet scale fuselage. Aero Gloss. "OK" Cub .14; F:O&R AA; Pl:"OK" Cub; Pr:Top Flite 9/4. |
| | 2 | James Graves & Joe Stefani Windsor, Ont. | 95.32 | • Modified Jeticopter "50" cabin & l.g. changed. Sheet covering. 6C Berryloid. Two Jetex 50's, F:Jetex. |
| | 3 | Wayne Sutherland Baltimore | 89.80 | • Original design 3-bladed. 2C Aero Gloss. Baby Royal Spitfire .049; F:Spitzy; Pr:Kaysun 6/3. Profile fuselage resulted in 108 pt deduction. |

## Analysis of Top Model Aero Winners (Cont.)—National Championships of 1954

| EVENT | AGE & PLACE | FLYER | TIME OR PTS. | DATA |
|---|---|---|---|---|
| Indoor Cabin | J1 | Roy Richards Lincoln, Neb. | 280 | • W:26-99.5. S:37.5. R:7 Bo:20 with 9" cabin Wt. .090 oz. 65 rpm; 4:20 run. CG 65%. Jemfilm. Pr:14/2.1. 1 loop 3/32 9" T-56. 1400 turns. |
| | J2 | Ron Brich | 234.5 | |
| | J3 | Brent Hawkins Morton, Ill. | 120.4 | • W:22-85 B-7. S.30. R 7. 500 rpm; 1350 turns. Tissue covered. 1 loop 3/32 15" T-56. |
| | S1 | Lewis Groebe Chicago | 289 | • W.26-100. S.30. Bo:20 geodetic. R:6. Wt .13 oz. CG 50%. 130 rpm. 1400 turns. Jemmlke. 1 loop 5/64 18" T-56. Pr.12/18. |
| | S2 | H Andresen Chi[illegible] | 204 | • Featherette with truss cabin, polyhedral, carved prop 9/15. 1 loop 1/16 12" T-56. |
| | S3 | John Tapert Grosse Pt., Mich. | 12 | • W:32-150. S:45%, R.25% stab. Bo:25, 1/32" bulkheads on 1/64" tube. .32 oz. CG 60%. 70 rpm Pr:12/30. 1 loop 1/16 20" T-56. 200 turns. |
| | O1 | Bob Bienenstein Detroit | 865.2 | • W:31-148 5/16 at 35%. S:48 Bo 25 hollow tube. Wt. .042 oz R:6.5 CG 60%. 50 rpm. Pr:16/34. 1 loop 5/64 18" P.W. Brown. 1800 turns. |
| | O2 | Manuel Andrade Castro Valley, Cal. | 725 | • W:31-148 B-7. S:60. Bo: 22.5 truss fuselage stick bubble. R.6. CG 75%. 70 rpm. 1200 turns Wt .045 oz. Pr:16/29. 1 loop Pirelli. |
| | O3 | Al Rohrbaugh Ft. Wayne, Ind. | 693.6 | • W:32-147 .001 nichrome bracing. S:46 R:12. Bo 25 15/32 sq Warren truss pod using 1/64 sq. Wt .040 oz. CG 50%. 85 rpm. Pr:14/28. 1 loop 5/64 24" T-56. 975 winds. |
| Indoor Stick | J1 | Roy Richards Lincoln, Neb. | 538 | • W 26-99 6 unbraced. S 37.5. R.7. Wt .055 oz Bo:24 stick. 70 rpm. CG 70%. Pr 14/32. 1 loop 5/64 12" T-56. 1400 turns. |
| | J2 | Ed Schneider | 424.2 | |
| | J3 | Ron Brich | 400.6 | |
| | S1 | Ray Harlan Yeadon, Pa | 842 | • Andrews "C" stick. Wt .058 oz. Pr:14/22. 2000 winds 1 loop 3/32 18" T-56. |
| | S2 | Paul Crowley Detroit | 728.2 | • W:28.87-149.9 6% curve. S:57 6% curve. R:8.66. Bo.30 tube. CG 60%. Wt .042 oz. 100 rpm. 1 loop 5/64 18" T-56. 2000 turns |
| | S3 | Dave Domizi Rocky River, O. | 582.8 | • W 28-120 6% G-7. S:40 6% G-7. R:4. Bo:21 balsa tube. Wt .047 oz. 120 rpm. CG 50%. 1 loop 1/16 17" T-56. |
| | O1 | R. W Obarski Akron | 1245 | • W:28.5-128. S:41. R.5%. Wt .034. 75 rpm. 2200 turns. 1 loop 1/16 16" T-56. |
| | O2 | Julius Rudy Irvington, N.J. | 1224.4 | • W:32-149 tungsten wire braced. Wt. .038 oz. 74 rpm. Andrews design. Pr:16/30. 1 loop 1/16 19" T-56. 1900 turns. |
| | O3 | CPO Stan Stanwick | 1106 | |
| Indoor H/L Glider | J1 | Dave Goetzinger Encino, Cal. | 39.9 | • W:15-38 ⅛" sheet triangle 1/16" undercamber. S.9 Clark Y 1/16" sheet R:1 Bo 16 x 3/16 x ⅝" Wt 60 oz. Rt-lt pattern CG 80% Mixture nitrate, castor oil, talcum powder |
| | J2 | Arthur Slater Brooklyn | 38.2 | • W 14-38 turbulent flow with h.p ¼ back S:8.75 flat plate feathered t.e, rounded l e R:1 5 Wt .32 oz Rt-lt pattern. 2C Testor sealer Bo:18 |
| | J3 | Ron Brich | 36.6 | |
| | S1 | Curtis Minier Reseda, Cal. | 51.6 | • W:14-39 triangular airfoil. S 6.5 thin symm. R:1.25. CG 65% Wt .342 oz. 1C nitrate thinned 50% plus castor oil. Straight-rt pattern. Bo:13.5 |
| | S2 | Dave Domizi Rocky-River, O. | 50.2 | • W:18-50. S.13 symm R:3 Bo 22. CG 50% Wt 42 oz Rt-lt pattern. |
| | S3 | Tom Johnson Allendale, N.J. | 47.8 | • W:17-54 3/32 undercamber ⅛" sheet S:12.7, flat plate 1/32" sheet. R:4.5 CG 60% Bo:17.25 ⅝ x ⅛ balsa CG 60% Rt-lt pattern. |
| | O1 | Manuel Andrade Castro Valley, Cal. | 51 | • W 18-62 undercambered. S:21.5. R:4. Bo:21. CG 75%. Wt .87 oz |
| | O2 | Joe Bilgri San Jose, Cal. | 50.4 | • "Dottie" from Aug. '52 "AT". 1C Testor sealer. |
| | O3 | Robert DeBatty Oaklawn, Ill | 50 | • W:11.75-30. S:10 streamline. R:2.15. Bo:14.5. Wt .27 oz. |

## R/C Monocoupe

(*Continued from page* 60)

with RK- 1 two-tube receiver mounted on sponge rubber against back of bulkhead. Battery complement is two 22½V. Hearing Aid B source, one 1½V. C cell, and four pencells for escapement power. Batteries are arranged on sides and behind fuel tank. This trims out ship well with no ballast needed.

First flights should use about 3/16" rudder travel each way. The amount shown on plans really snaps the nose around and should be used only after trim out is completed. You'll like this Monocoupe for R/C, it's fast and responsive and will bounce back to fly again after lots of wear and tear.

### Bill of Materials

*(Radio Gear Not Included)*

4 ⅛"x⅛"x36", fuselage stringers. 5 ⅛"x¼"x36", fuselage stringers, formers, tail ribs. 1 ⅛"x½"x36", formers. 3 ¼"-x¼"x36", fuselage frame, tail spar. 4 ¼"x½"x36", fuselage frame, wing spars. 1 ¼"x¾"x36", leading edge tails. 2 ¼"-x1"x36", trailing edge wing. 1 3/16"x1"-18", trailing edge tails. 4 ½"x3"x36", wing ribs, fuselage sides. 1 ½"x3"x36", fuselage sides, wing tips. 2 ½"x½"x36", leading edge wing. Blocks for nose, belly, top cowling.

4 6"x12" of 1/16" plywood, doublers, floor, spars. 2 6"x12" of ⅛" plywood, formers, landing gear mount. 1 4"x5" of ¼" plywood, firewall. 1 ¼"x¼"x16" gussets. 1 ½"x½"x5" pine, firewall gussets. 1 ¼"x½"x10" pine, firewall backing. 1 36" length 1/16" dia. wire pushrod, hooks. 1 36" length ⅛" dia. wire, landing gears.

.062" st. alum. 2½"x16", landing gear. Wheels, nylon covering, 20 oz. clear dope, 12 oz. colored dope, cement, wood screws, Weldwood, misc. nuts-bolts.

### BACK COPIES

Available in limited quantities while supplies last are certain issues of "Air Trails Model Annual" and the famous all-aviation annual "Air Progress." Both publications present valuable material for the serious aeromodeler and air fan respectively. For information on what copies may be secured and prices write Back Copy Department, Street & Smith Publications Inc., 304 E. 45th Street, New York 17, N. Y.

## PAA-Load Flying

(*Continued from page* 52)

certainly can't quibble at this. It is probable that decals will be available to meet this specification.

The former Class B PAA-Load category will be dropped completely, as will Rubber PAA-Load. The latter was an interesting experiment, and had its devoted adherents, but there were just too few of them.

In an effort to provide some sort of competition for the U-control fliers, Pan American tried running an Endurance Event several times during 1954. This took the form of loading up a model with fuel and seeing how long it could be kept in the air non-stop. A record of one hour and 32 min. was set at the Mirror Meet, but an effort to top this at the Nationals failed. Since that time we have heard of fantastic times logged in unofficial tries at this sort of flying. Since it was evident that this event was fast becoming a test of human endurance, rather than of ability of the plane to carry a pay-load, the rules have been made much more specific, and only a pint of fuel will be allowed. So that the event will conform to the basic concept of all PAA-sponsored model flying, the plane will have to carry a standard 8 oz. dummy, plus 2½ lbs. of cargo—in addition to the fuel. This event will be flown only with the International Class (2.50 cc or .1525 cu. in.) engines as maximum displacement and the model must ROG on its own landing gear; no dollies or droppable gear allowed.

Gross takeoff weight of model, dummy, cargo and fuel must not exceed 7 lbs., and line length is 60'. Only one contestant may fly any one entry, and he just flies until the fuel is gone. The entrant thus must determine at what speed his model flies most economically; speed or number of laps completed do not enter into the scoring. But lest he be tempted to run his engine too slowly-the model has to ROG within three laps and fly at an average altitude above the height of the contestant's controlling hand.

Well, there you have the PAA outlook for 1955. Drag out the drawing board and get going, for a lot of you who have enjoyed the various PAA events in the past now have a new chance to show your design and flying skill. And for a copy of the new rules, write to George Gardner c/o Pan American World Airways, 28-19 Bridge Plaza, Long Island City 1, N.Y.

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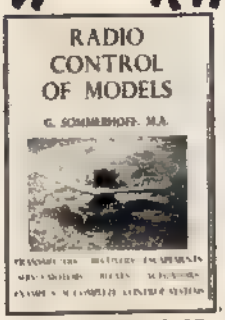


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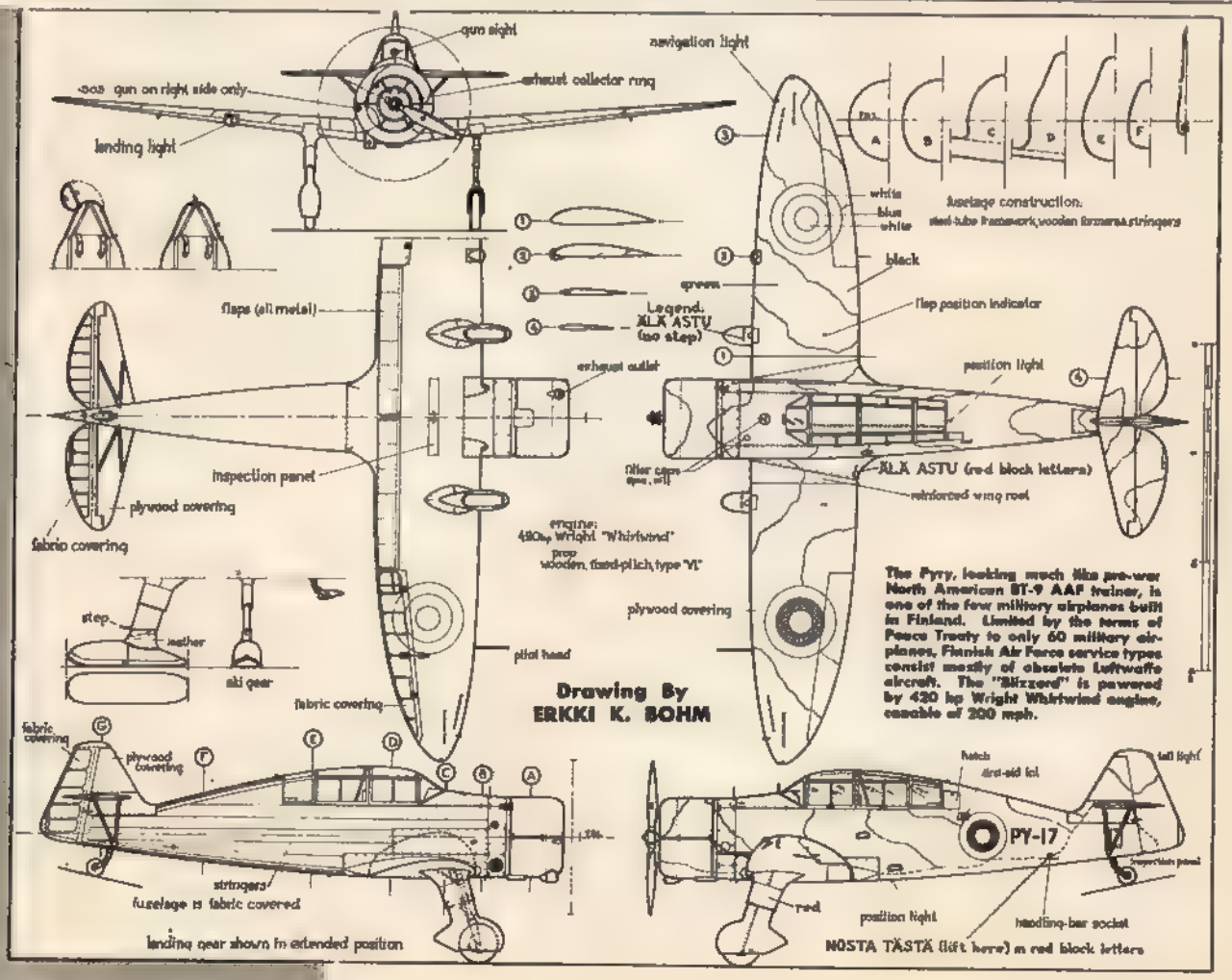

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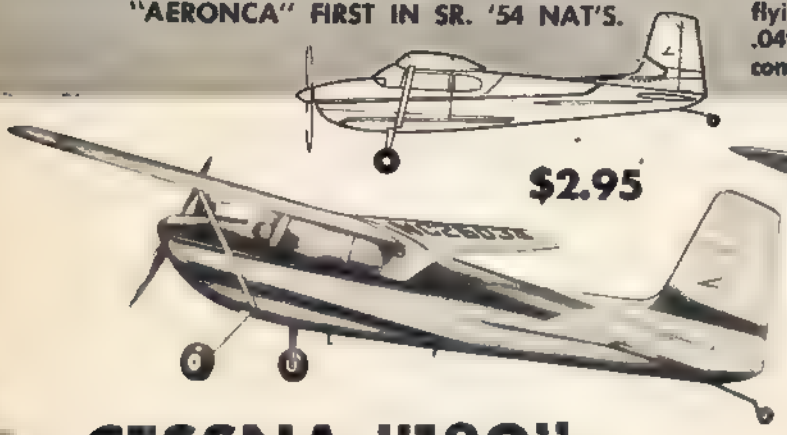

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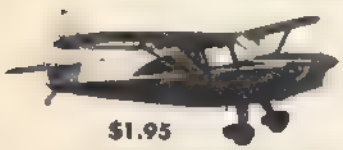

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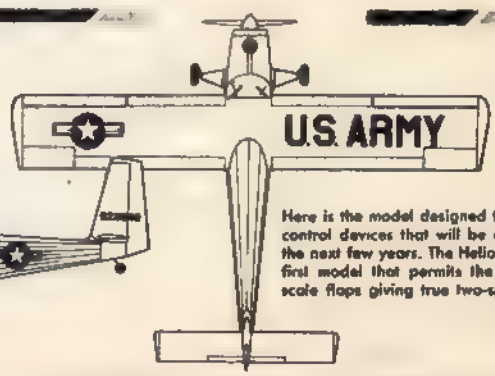


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Metal Cowl; Designed for Stunt and Navy Carrier

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For .19 to .35 Engines — 45" Wingspan
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- Jim Walker "U-Control"
- Rubber Wheels, Hardware
- Metal Parts as Listed
- Authentic Decals
- Covering Material
- Formed Canopies, or Celluloid as required

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- Hardware
- Covering Material
- Die-Cut Celluloid
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- Authentic Full Color Decals
- Die-Cut Mahogany Plywood
- Pre-Fabricated Block Balsa
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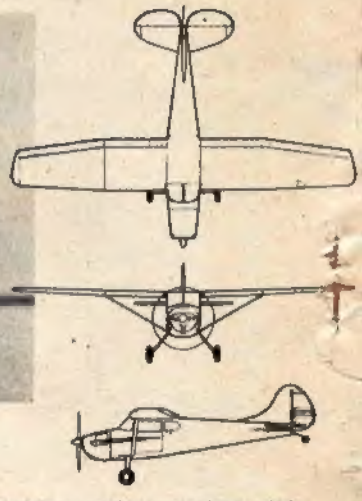

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**For .25 to .35 Engines — 72" Span — 2" Scale**

Controlling your "170" by Radio is a thrill you will never forget! Perfect scale, rugged, stable in all attitudes, yet responsive in control with good wind penetration qualities. Gear location is ideal for extended take-off runs, while its larger size makes it less sensitive to turbulent air. A large cabin makes extra radio installations easy.

The plans include a wealth of scale details which will appeal to the master craftsman. Inexperienced builders will find construction simplified by the full size plans, sketches and assembly technique.

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**Fly it on Ponds – Rivers – Bays – Lakes or Flying Fields!**

Fly it Five Ways:

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- Radio Control
- PAA-Load
- Clipper Cargo

- Detailed Full Size Plans
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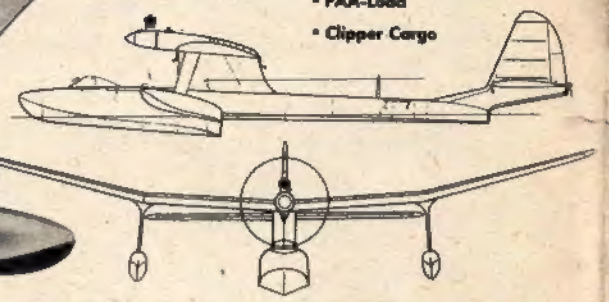

## Henry Struck's "SEA-CAT"

**N.A.C.A. Type Planing Hull Amphibian**

**For .15 to .25 Engines — 68" Wingspan**

Proven performance on the original test models include: First International Radio Control Flight; Fourth place in a field of seventy in the Mirror Flying Fair (The first R.C. contest for both Struck and the "Sea-Cat"); First in Radio Control at Screamin' Demons Long Island Sound Hydro Championship; Second in PAA-Load at the same contest; and Precision flights carrying over a pint of fuel at the First "World Model Air Olympics."

### First All-Purpose Gas Model

Here is a model design that has been a full thirteen years in development. It's N. A. C. A. Planing Hull design makes water take-offs easy. Its hull is easily accessible for radio control equipment, PAA Dummy Pilot or Clipper Cargo.

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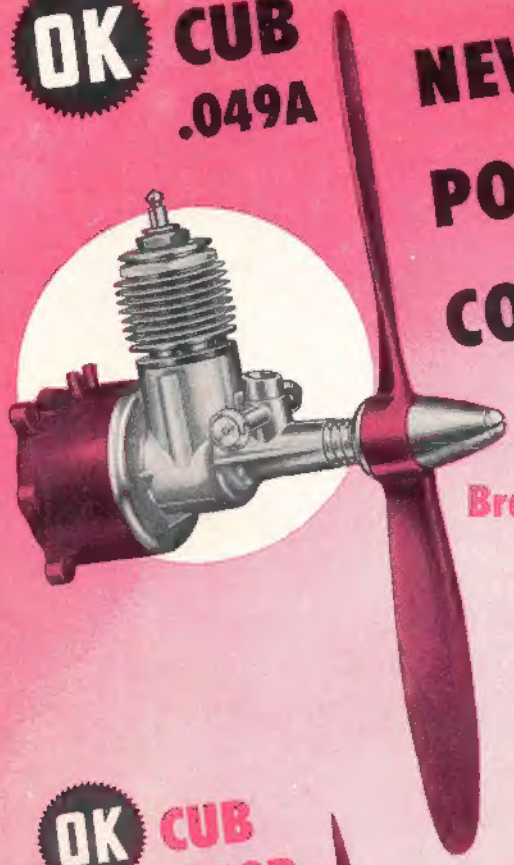

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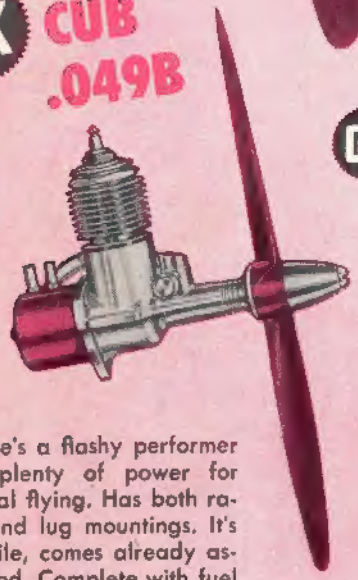

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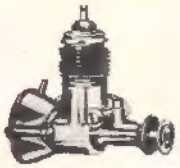

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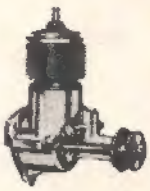

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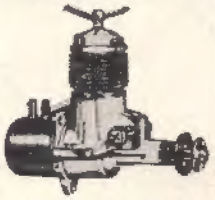

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